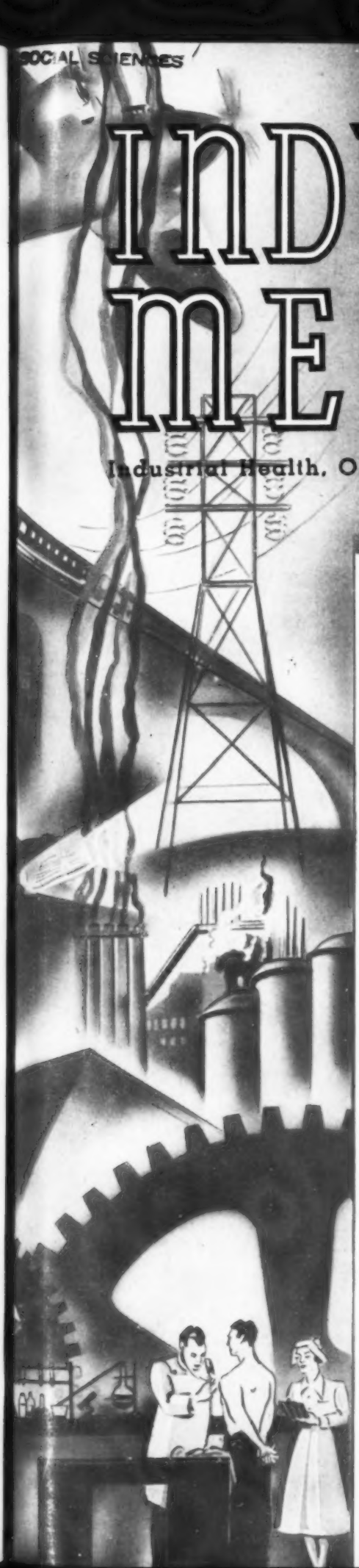
SOCIAL SCIENCES

PUBLIC LIBRARY
MAR 5 1947
DETROIT

INDUSTRIAL MEDICINE

Industrial Health, Occupational Medicine and Traumatic Surgery



March, 1947

Occupational Deafness
— Evaluation of Developmental Factors —

Neuropsychiatric Conditions
— In Railroad Employees —

The Industrial Physician
— His Role in the Personnel Department —

Treatment of Tuberculosis
— New Methods —

False Aneurysm
— Case Report —

Persistent Hematoma
— Case Report —

Treatment of Infected Wounds
—With a Nitrofuran —

Spinal Cord Injuries
— Diagnosis and Treatment —

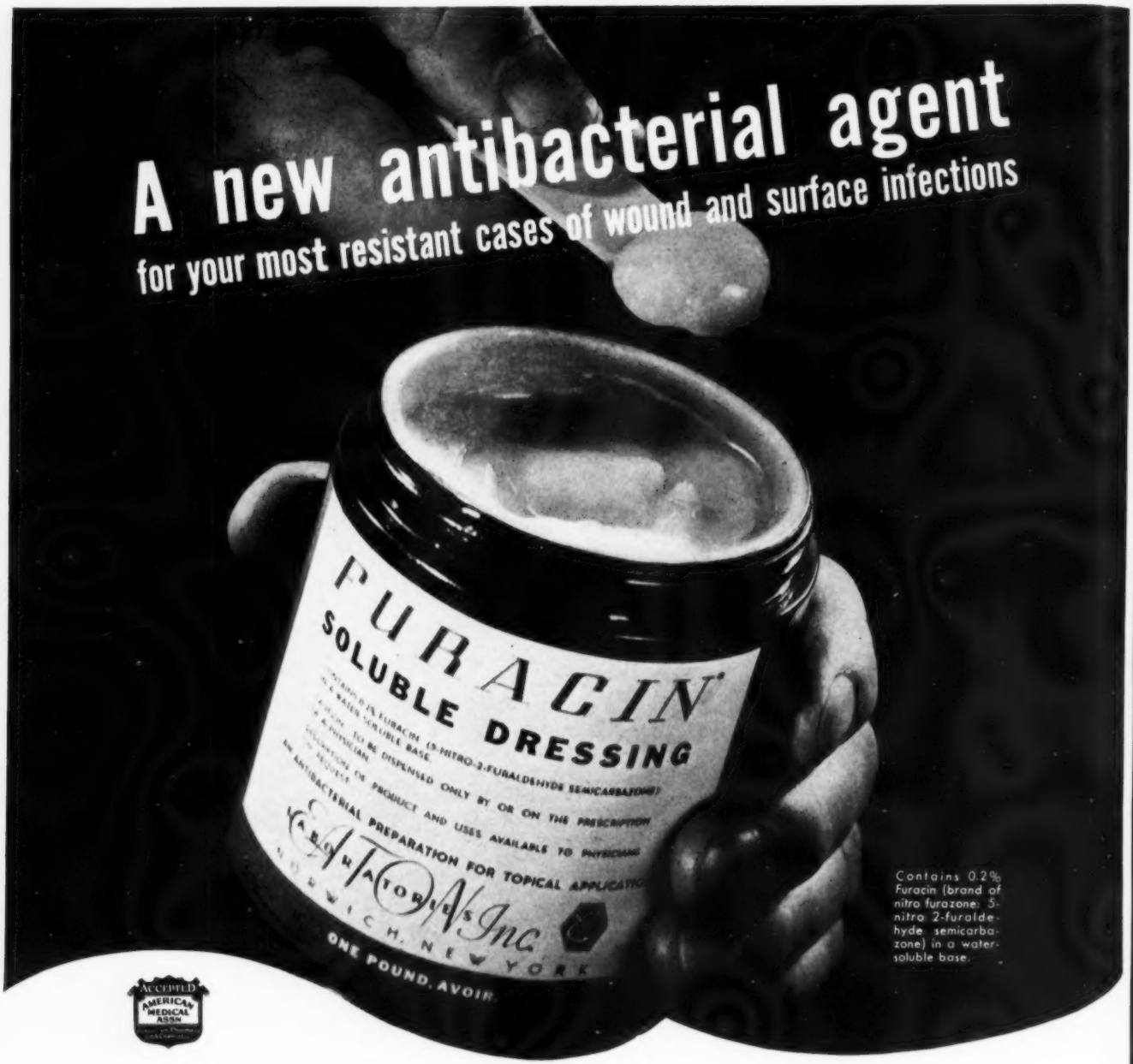
Industry's Toothache
— Importance of Dental Care —

Time and Cost Standards
— In Industrial Hygiene Experiment —

Volume 16 Number 3

A new antibacterial agent

for your most resistant cases of wound and surface infections



Contains 0.2% Furacin (brand of nitro furazone: 5-nitro 2-furaldehyde semicarbazone) in a water-soluble base.

ACCEPTED AMERICAN MEDICAL ASSN

INDICATIONS:

Infected surface wounds, or for the prevention of such infection
Infections of second and third degree burns
Carbuncles and abscesses after surgical intervention
Infected varicose ulcers
Infected superficial ulcers of diabetics
Secondary infections of eczemas
Impetigo of infants and adults
Treatment of skin-graft sites
Osteomyelitis associated with compound fractures
Secondary infections of dermatophytoses.

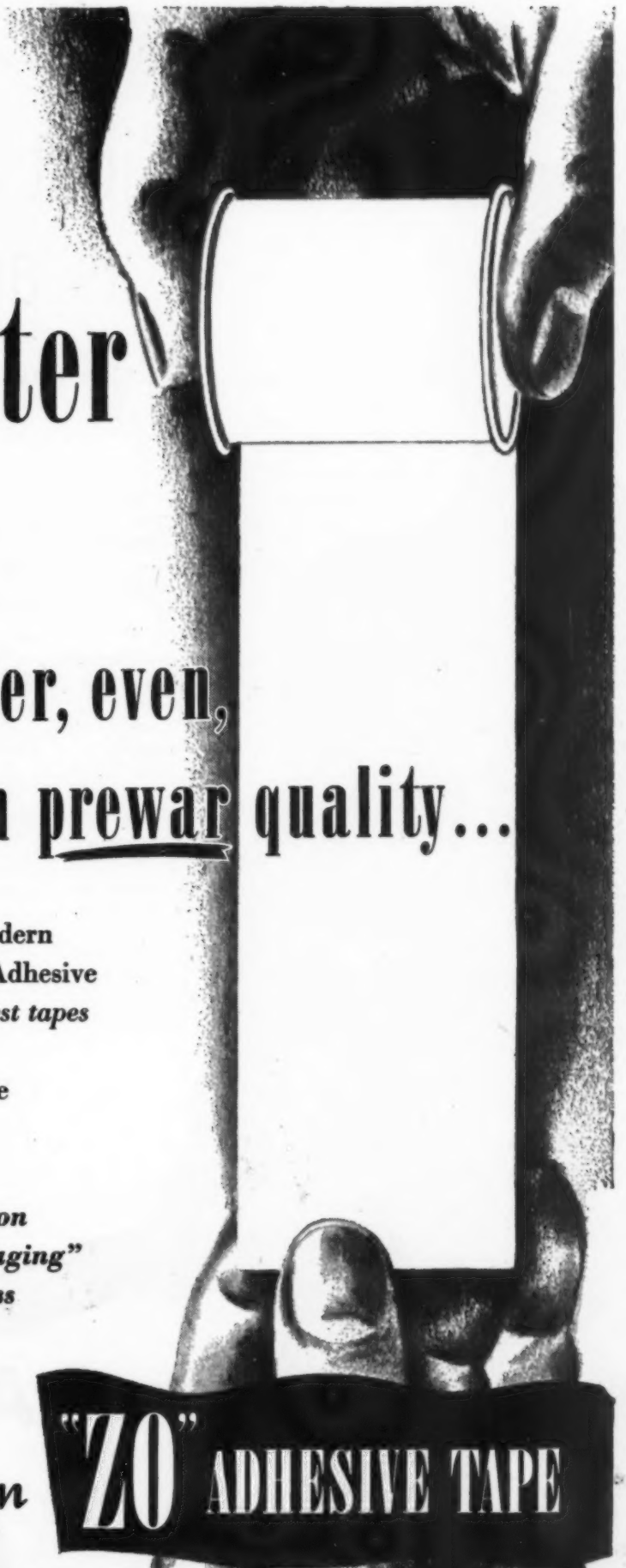
Another of its several advantages

THE WIDE ANTIBACTERIAL SPECTRUM of Furacin Soluble Dressing in vitro includes the majority of bacteria found in surface infections, including both gram-negative and gram-positive organisms*. Clinical effectiveness against these organisms does not necessarily correspond to results in vitro.

EATON LABORATORIES Inc.
NORWICH, NEW YORK

*Dodd, M. C. & Stillman, W. B.: J. Pharmacol. & Exper. Therap. *82*:11, 1944.
*Unpublished work from the Research Department of Eaton Laboratories.

Now better



better, even, than prewar quality...

A product of modern research, "ZO"* Adhesive Tapes are *the finest tapes ever produced.*

For every requirement, they are unexcelled for—

1. *Instantaneous "stick"*
2. *Freedom from skin reaction*
3. *Long life—resistance to "aging"*
4. *Whiteness of adhesive mass*
5. *Ease of unwinding*
6. *Uniformity of quality*

ORDER FROM YOUR DEALER

Johnson & Johnson

"ZO" ADHESIVE TAPE

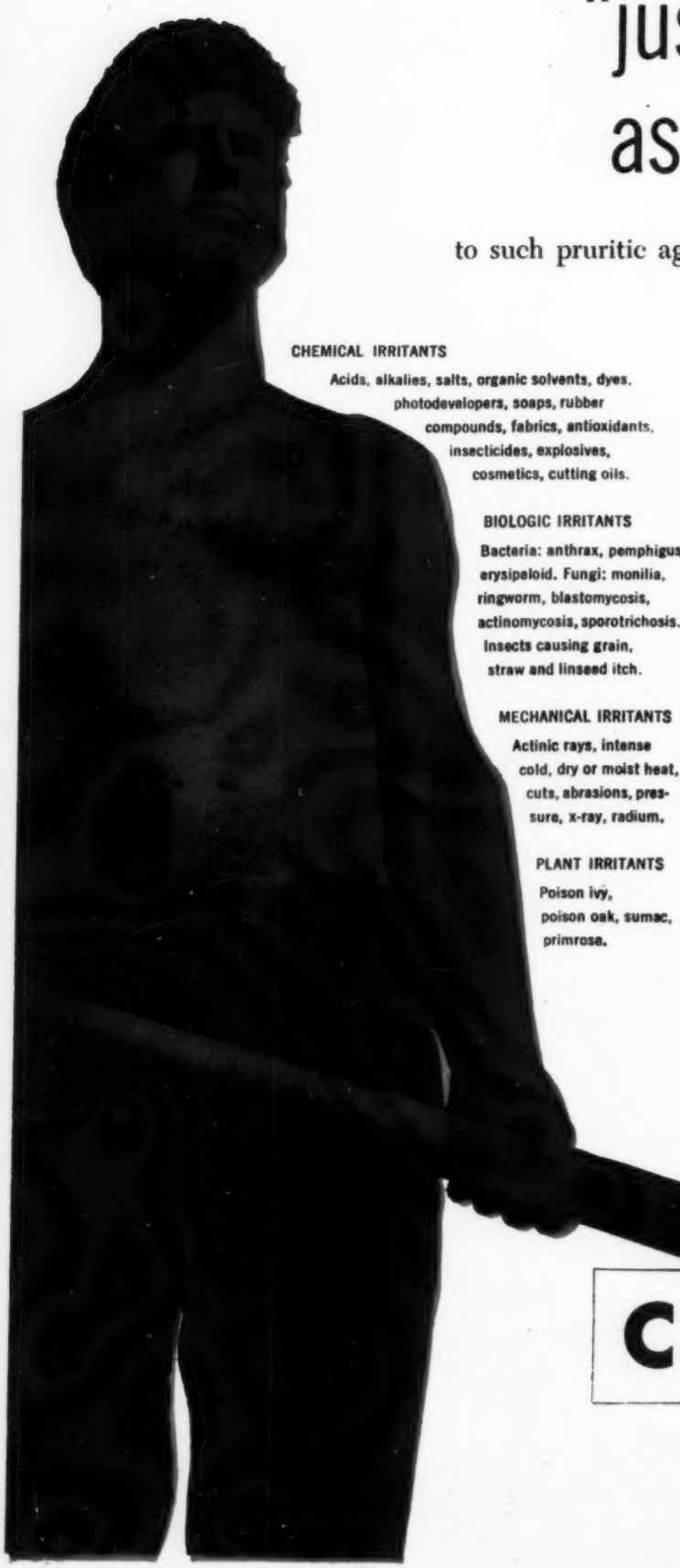
*TRADEMARK OF JOHNSON & JOHNSON

"FOR OVER FIFTY YEARS, THE STANDARD OF EXCELLENCE IN THE SURGICAL AND MEDICAL WORLD"

The havoc wrought by industrial dermatoses demonstrates that the industrial and farm worker is

"just as sensitive as an artist"

to such pruritic agents as:



CHEMICAL IRRITANTS

Acids, alkalies, salts, organic solvents, dyes, photodevelopers, soaps, rubber compounds, fabrics, antioxidants, insecticides, explosives, cosmetics, cutting oils.

BIOLOGIC IRRITANTS

Bacteria: anthrax, pemphigus, erysipeloid. Fungi: monilia, ringworm, blastomycosis, actinomycosis, sporotrichosis. Insects causing grain, straw and linseed itch.

MECHANICAL IRRITANTS

Actinic rays, intense cold, dry or moist heat, cuts, abrasions, pressure, x-ray, radium.

PLANT IRRITANTS

Poison ivy, poison oak, sumac, primrose.

Pruritic control is singularly simple with Calmitol Ointment. Its active antipruritic ingredients, camphorated chloral and hyoscyamine oleate, reduce the sensitivity of cutaneous receptors and nerve endings and create active hyperemia to aid in removal of offending toxins. Free from stimulating or keratolytic drugs and free from potentially harmful phenol or cocaine derivatives, Calmitol does not cause unwanted by-effects. Calmitol—first thought in pruritus—promptly assures three desiderata in the treatment of occupational dermatoses:

1. Checks itching, smarting and burning which interferes with concentration and acuity.
2. Minimizes danger of infection.
3. Helps protect against further exposure and continued dermal injury.

CALMITOL

Thos. Leeming & Co. Inc

155 EAST 44TH STREET, NEW YORK 17, N. Y.

MEDICINE SURGERY

INDUSTRIAL HEALTH
OCCUPATIONAL DISEASES
TRAUMATIC, INDUSTRIAL

INDUSTRIAL HYGIENE
INDUSTRIAL MEDICINE
& RAILROAD SURGERY

Industrial Medicine | Volume 16 | MARCH, 1947 | Number 3 | Industrial Medicine

This Month

THE INDUSTRIAL Physician.....George A. Wainwright, M.D. 107
—His Role in the Personnel Department
OCCUPATIONAL Deafness.....Walter A. MacLaren, M.D. 109
—Evaluation of Developmental Factors
(With *Albert L. Chaney, Ph.D.*)
FALSE Aneurysm.....S. Thomas Glasser, M.D., F.A.C.S. 115
—Case Report
(With *Joseph Bloom, M.D.*)
TREATMENT of Tuberculosis.....Carl H. Gellenthein, M.D., F.A.C.P. 117
—New Methods
NEUROPSYCHIATRIC Conditions....F. Garm Norbury, M.D., F.A.C.P. 122
—In Railroad Employees
PERSISTENT Hematoma.....Edwin DeJongh, M.D. 125
—Case Report
(With *H. W. Gehring, M.D.*)
EDITORIAL:
Clothes That Breathe.....Carey P. McCord, M.D. 126
Placement vs Compulsion..... 126
TREATMENT of Infected War Wounds..Newton C. McCollough, M.D. 128
—With a Nitrofuran
SPINAL Cord Injuries.....John Martin, M.D. 130
—Diagnosis and Treatment
THE BUFFALO Conference 134
—A.A.I.P. & S. Thirty-Second Annual Meeting
INDUSTRIAL HEALTH and DISEASE:
Time and Cost Standards in Hygiene Experiment..... 138
Industry's Toothache.....Ernest Goldhorn, D.D.S. 140
The Carious Tooth....Hans H. Reese, M.D., John G. Frisch, D.D.S. 145
Medicolegal Aspects.....C. O. Sappington, M.D., Dr P.H. 146
Curable Heart Disease.....T. K. Williams, M.D. 151
NEWS, COMMENT, OPINION..... 153
Personal.....10 General.....11

The Buffalo Conference

American Association of Industrial Physicians and Surgeons
Thirty-second Annual Meeting
American Association of Industrial Nurses
Fifth Annual Meeting
American Industrial Hygiene Association
Eighth Annual Meeting
American Association of Industrial Dentists
Fourth Annual Meeting
American Conference of Governmental Industrial Hygienists
Ninth Annual Meeting

Buffalo, New York—April 29-May 4, 1947

See PROGRAM on page 134

IN A COMMENT in *Illinois Med. J.* (December, 1946, p. 340), DR. ROLAND R. CROSS, Director, Illinois Department of Health, says: "The greatly increased awareness of all to the need for, and value of, a healthy worker will doubtless result in a demand for medical services in industry that will challenge the medical profession." DR. CROSS speaks with authority, but the subject of industrial medical care seems now to be challenging a veritable host of individuals and agencies outside of medicine. As was the case with various aspects of the veterans' problems, "everybody's tryin' to get into de act." Lay interest is commendable, but medical care is a *medical* matter, and not, as might be implied from the eager attention being given it in certain quarters, political. So long as the spectre of government medicine stalks the Congressional halls, lay agitation in which non-medical agencies are the protagonists must be suspect. . . . FOR our "How-Times-Have-Changed" Department, the following from an editorial in *Illinois Med. J.* (see page 158): "This (industrial medicine) is a specialty in medicine generally recognized today and any physician qualifying as a reliable industrial physician and surgeon must naturally have special training along these lines". . . . ONE reading "What Did You Do, Daddy?" (page 161) cannot be entirely without sympathy for the poor chaps in C.P.A. Perhaps a Purple (ink) Heart should be provided for. . . . FOLLOWING, on the same page, is a quotation from DR. WILLIAM P. YANT'S response on receiving the Pittsburgh Award for 1946, from the American Chemical Society. Food for thought! To the medical profession, the challenge direct! . . . . AND see the Preliminary Program of the Buffalo Conference, April 29-May 4, which is given in detail on (page 134 and 136). . . .

INDUSTRIAL MEDICINE, The Journal of Industrial Health, Occupational Diseases and Traumatic Surgery. Entered as second class mail matter August 28, 1941, at the Post Office at Chicago, Illinois, under the Act of March 3, 1879. Published on the fifth of each month by INDUSTRIAL MEDICINE PUBLISHING COMPANY, Chicago (publishers also of INDUSTRIAL NURSING, issued monthly, and AMERICAN INDUSTRIAL HYGIENE ASSOCIATION QUARTERLY). STEPHEN G. HALOS, President; A. D. CLOUD, Publisher; C. O. SAPPINGTON, M.D., DR. P.H., Editor; CHARLES DRUECK, JR., Secretary and Treasurer; STEPHEN G. HALOS, Advertising and Business Manager. Member, Audit Bureau of Circulations. PUBLICATION, EDITORIAL and EXECUTIVE Offices: 605 North Michigan Avenue, Chicago 11, Illinois. Subscription $5.00 per year in the United States; $5.50 per year in Canada; $6.00 per year in other countries. Single copies 75 cents. Title Registered in United States Patent Office.

Copyright, 1947, by Industrial Medicine Publishing Company, Chicago.

Eastern Representative, H. GORDON HUNTER, 152 West Tenth Street, New York City, Telephone Watkins 9-1067.

CHANGE of ADDRESS: FOUR weeks' notice required; changes cannot be made without old address as well as new; please furnish postal zone number for new address if city requires it.

HYDROSULPHOSOL*

For Burns

HYDROSULPHOSOL

HYDROSULPHOSOL

HYDROSULPHOSOL

For All Type Burns. The most effective non-toxic remedy yet discovered by Science to bring about almost instant relief from burns caused by *X-ray, Lye, Grease, Steam, Open Flame or Caustic Acids.*

Prevents Infection. Contains Sulphur in a free colloidal state which stimulates rapid growth of new cells to avert bacteria concentration in the burn area.

Shortens Convalescence. Extensive clinical and laboratory tests have proven that Hydrosulphosol Therapy reduces the healing period thereby minimizing the possibility of scarred tissue.

For actual proof of the efficacy of HYDROSULPHOSOL, write for your sample together with a reprint of Dr. A. E. Cruthirds' article which appeared in the October 1946 issue of THE AMERICAN JOURNAL OF SURGERY.

Distributed by
REES-DAVIS DRUGS, INC.
MERIDEN CONNECTICUT

DR. PILGRIM

AN INTERESTING conference with representatives of management consultants, noting their particular interest in the cost of health departments in industry. . . . AND concerned with much editing of manuscripts and the reading of material, as well as the selection of tables and other pertinent data for future presentations; and anent the latter, to Milwaukee to speak before the Wisconsin Council of Safety on "Industrial Health: Costs, Benefits and Administrative Relationships," and seeing again my good friend, DR. PAUL BREHM, and others who seemed most interested in the data presented. . . . AND again at the desk and busy on biographical data for a number of different directories, it seeming that this is an endless task, either of revision or of preparation. . . . AND enjoying the visit of ENGINEER EGIL FOLKVARD, of Oslo, Norway, intensely interested in the subject of the investigation of fatigue of industrial workers, references being made constantly by PILGRIM to the work of DR. D. B. DILL, of Boston. . . . AND at a pre-meeting conference with DRS. CARL PETERSON, ERNEST BROWN and EDWARD C. HOLMBLAD, concerned with problems of industrial medical education; and later studying problems of publicity for the combined spring meeting of the industrial professional groups; meanwhile editing survey material. . . . AND in conference with writers of manuscripts particularly concerning first aid measures in eye injuries of all kinds, including acid splashes and others, wherein it was found that such material lent itself easily to simplification, as first aid measures should. . . . AND to the Executives Club luncheon at the Sherman Hotel to hear Ilka Chase, it being Ladies' Day, with guests MESDAMES PILGRIM and CUMMINGS, and enjoying the wholesome point of view on married life, punctuated with irony and satire. . . . AND busy with long dis-

Aloe, A. S., Company....142 *Pentothal Sodium Outfit*
American Optical Company....153 *Blood Instruments*
American Sterilizer Company... 24 *Sterilizers, Operating Tables, etc.*
Bard-Parker Company, Inc..... 18 *Surgical Knife Handles*
Bauer & Black.....131 *Curity Cloth*
Bauer & Black.....137 *Suspensories*
Bauer & Black.....146 *Tensor Elastic Bandage*
Bausch & Lomb..... 26 *Industrial Eye-Wear*
Baybank Pharmaceuticals, Inc...145 *Pinceleum*
Becton, Dickinson & Co.....154 *Ace Lastex Bandage*
Bilhuber-Knoll Corporation .....158 *Metrazol*
Breck, John H., Inc.....133 *Hand Preparations*
Bristol Laboratories, Inc.....139 *Penicillin*
Bristol-Myers Company .....159 *Sal Hepatica*
Burdick Corporation, The..... 15 *Rhythmic Constrictor*
Cambridge Instrument Co.....148 *Electrocardiograph*
Campho-Phenique .....147 *Campho-Phenique*
Cereal Institute, Inc.....143 *Cereals*
Chesebrough Mfg. Co., Cons'd.. 23 *Vaseline Petroleum Jelly*
Ciba Pharmaceutical.....4th Cover *Trasentine*
Cutter Laboratories .....127 *Penicillin*
Denver Chemical Mfg. Co., Inc. 156 *Galatest-Acetone Test*
Denver Chemical Mfg. Co., Inc. 160 *Antiphlogistine*
Desitin Chemical Co.....162 *Desitin Ointment*
Dome Chemicals, Inc..... 6 *Dermatitis Therapy*
duPont, E. I., deNemour & Co. 28 *Patterson Screen Division*
Eaton Laboratories, Inc...2nd Cover *Furacin*
Electro-Physical Laboratories ....144 *Electrocardiograph*
Ethicon Suture Laboratories.....151 *Ethicon Sutures*
General Cellulose Co., Inc., The 152 *S'Wipes*
General Electric X-Ray Corp.....141 *Portable X-Rays*
Hynson, Westcott & Dunning, Inc..149 *Thantis Lozenges*
Ille Electric Corporation .....150 *Hydro Massage Tanks*
Industrial Medicine Pub. Co....150 *"Introduction to Indust. Med."*
Iodine Educational Bureau, Inc..152 *Iodine*
Johnson & Johnson..... 1 *ZO Adhesive Tape*
Johnson & Johnson..... 22 *Back Plaster*
Johnson & Johnson.....135 *Adaptic Elastic Bandages*
Keystone View Company.....149 *I V S Tests*
Leeming, Thos. & Co., Inc..... 2 *Calmitol*
Lilly, Eli and Company..... 32 *Becotin*
Lily-Tulip Cup Corporation.....162 *Paper Cups*
Lobica, Inc. ..... 29 *Taxol*
Macalaster Bicknell Company...129 *Fenwall Equipment*
Merck & Co., Inc..... 27 *Pyridium*
Milburn Company, The .....147 *Ply-14 Formulas*
New York Pharmaceutical Co....152 *Hayden's Viburnum Compound*
Nutrition Research Lab.....30, 31 *Ertron*
Occy-Crystine Laboratory ..... 6 *Occy-Crystine*
Parke, Davis & Company..3rd Cover *Dilantin Sodium*
Powers X-Ray Products, Inc..... 5 *Magazine Cassette*
Powers X-Ray Products, Inc..... 16 *Magazine Cassette*
Professional Surgical Supply Co. 161 *Splints*
Propper Manufacturing Co.....149 *Wound Clips*
Rees-Davis Drugs, Inc..... 4 *Hydrosulphosol*
Reynolds, R. J., Tobacco Co.....155 *Camel Cigarettes*
Roerig, J. B., & Company..... 17 *Darthronol*
Schenley Laboratories, Inc..... 9 *Penicillin*
Schering Corporation ..... 7 *Progynon-B*
Sharp & Dohme ..... 13 *Merazine*
Shield Laboratories .....157 *Riasol*
Surgitube Products Corporation. 11 *Gauze Bandages*
West Disinfecting Company..... 19 *Lan-O-Kleen*
White's Laboratories, Inc.....20, 21 *A D Ointment*
Wilmot Castle Co.....150 *Catalog*
Winthrop Chemical Company.. 14 *Pluravit*
Wyeth, Incorporated ..... 25 *Ulcer Therapy*

POWERS PRESENTS

As Part of a Complete X-Ray Service

THE MAGAZINE CASSETTE

● Powers X-Ray Products has developed a means of effectively doubling the capacity of any standard chest x-ray equipment—the Magazine Cassette, created in cooperation with the New York City Department of Health. Using Powers X-Ray Paper, it is loaded like an ordinary camera and enables the technician to make up to 50 radiographs without changing or reloading the cassette. Units in service of the New York City Department of Health provided over 100,000 radiographs last year. A summary of their experience, reprinted from the American Review of Tuberculosis, says in part:

● "A new x-ray device, the Roll Paper Magazine Cassette has been found to offer marked advantages:
1. There is no initial outlay for equipment as the unit is loaned and kept in repair by the company.
2. The unit can be used with standard x-ray equipment and dark room facilities and can be used effectively with equipment of low capacity.
3. This unit will permit an appreciable amount of local mass surveys with existing stationary equipment."

The Magazine Cassette is, we believe, a signal advance in large-scale x-ray procedure. It will be especially valuable to hospitals, sanatoria and other volume x-ray users. Full details of the Magazine Cassette may be had by writing

Over half a million chest x-rays taken last year on Powers X-Ray Paper

POWERS X-RAY PAPER

POWERS X-RAY PRODUCTS, Inc.

Glen Cove, L. I., N. Y.

Group Radiography

"Total" Therapy

FOR INDUSTRIAL DERMATITIS

"The therapy of a majority of the cases of contact dermatitis encountered in industry", according to the noted dermatologist, Dr. Frank C. Combes[1], "requires no further medication than the intelligent use of a *good buffer solution such as Liquor Aluminum Acetate (Burow's solution)* . . . and a *good crude coal-tar paste.*"

His preference for wet dressings solution is **Domebero Tabs** ("widely used in industry", particularly by Parkes[2] at Curtiss Wright for cutting-oil dermatitis)—because it is "a convenient tablet which, when dissolved in water, releases a *lead-free aluminum acetate in appropriate dilution,*" with a substantial percentage of boric acid.

The *crude coal-tar paste* used at New York University, according to Combes, "is manufactured commercially under the name **Daxalan**"—which has been found *superior to distillates, filtrates and pastes containing liquor picis carbonis.*

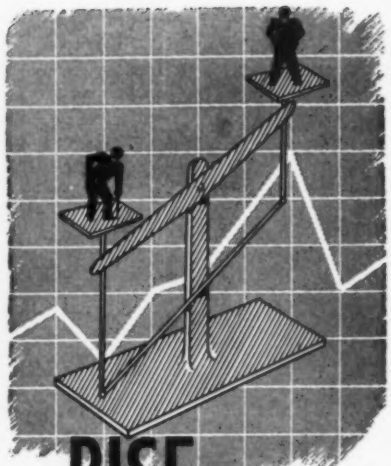
It must be properly applied for "optimum benefit", and Combes advises thinning with **Domolene** for spreading over a large area —because in his judgment its hydrophilic ointment base "does not materially lessen the therapeutic efficacy of the paste."

With tissue repair under way, and only erythema remaining, the use of **Domebero Ointment** (each ounce of which, in a special hydrophilic base, **possesses** the therapeutic action of one Domebero Tab diluted in a pint of water), permits a quicker return to work, while healing is promoted by its efficient topical action.

(1) Combes, F. C.: Indus. Med., July, 1944.
(2) Parkes, Morey: Indus. Med., January, 1944.

Samples and full details gladly sent on request

DOME CHEMICALS, INC.
250 EAST 43rd STREET • NEW YORK 17, N. Y.
Canadian Distributor: F. J. Whitlow & Co., Ltd., 165 Dufferin Street, Toronto, Ont., Canada



THE RISE AND FALL OF ARTHRITIC SYMPTOMS

As a result of the interesting parallelism between hepato-biliary and intestinal dysfunction and articular manifestations*, many physicians now include in the therapeutic management of their arthritis cases the routine administration of a saline eliminant, cholagogue, diuretic and sulfur-releasing detoxicant such as Occy-Crystine. They rely upon its effective four-fold action to provide thorough evacuation, improve hepato-biliary function, promote renal toxin elimination and release colloidal sulfur.

FORMULA: Occy-Crystine is a hypertonic solution containing the following ingredients: sodium thiosulfate and magnesium sulfate, to which the sulfates of potassium and calcium have been added in small amounts, contributing to the maintenance of solubility.

Liberal trial supply available to physicians on request

*Spockman, E. W. et al: Am. J. M. Sc., 202:68, 1941.

OCCY-CRYSTINE LABORATORY • SALISBURY, CONNECTICUT

OCCY-CRYSTINE

The Sulfur-Bearing Saline Detoxicant-Eliminant

tance calls from Pennsylvania and Indiana anent pending cases of medicolegal import, with consequent reading and case reviews. . . . AND on a Sunday afternoon to a special orchestra rehearsal with Mishel Piastro, the guest violin soloist, who played Brahms' Concerto at the concert the next evening most pleasingly, the other numbers being Brahms' Academic Festival Overture, the 3rd Symphony, and Hungarian Dances, all of which were well received. . . . AND much interested to receive a long distance telephone call from BERT HANMAN, just landed in New York from his European trip, it being a pleasure to hear his voice again and to note that he will travel in some of the eastern cities before returning to the Pacific Coast. . . . AND to an industrial plant to make periodic examinations, as is my won't, this being mixed with desk work and the reading of manuscripts, writing revision material, and working out schedules for future trips, among the other problems being the checking of material composition which might represent potential skin irritants. . . . AND arriving with little delay—starter being out of commission—for the conference on industrial medical education, and meeting many friends and acquaintances at the luncheon before the conference, including DRS. FISHBEIN, IRONS, SELBY, BARTLE, PETERSON, SEEGER, SAWYER, BROWN; and sitting with PROF. PHILIP DRINKER and DRS. HEACOCK and MUSSER; and later, at the meeting, seeing an additional group including DRS. McCORD, BUCHAN, DRAPER, WOODY, GOLDWATER, CHIVERS, KRONENBERG, MR. HOWARD STRONG, DRS. SANDER, HENNESSEY, HOLMBLAD, WALMER, WHITTAKER, O'HARA, WEISKOTTEN, COX, GOLDSTEIN, WARING, CARLISLE, FRIEND, ASH, and CAPT. BURTON, it being here that DR. RAYMOND HUSSEY presided with his usual grace and dignity, initiating a most interesting discussion, followed by others with respect to the future of occupational medicine, undergraduate and graduate training, criteria for residency approval, current practices in industrial medical education, and a general discussion in which many participated; it being heartening indeed to see that these problems are being seriously considered by organized medicine; and later, for libations and dinner with JOHN and RUTH McMAHON and DR. RICHARD WALMER, and then proceeding with them to Pittsburgh, the time passing pleasurably en route. . . . AND all day on two compensation cases before the Pennsylvania Compensation Board, where again it appears that little attention is paid to the etiology of oc-

—*Continued on page 162.*

Nature herself asks for nothing more

It would seem wise to assist nature with an endocrine substance similar to her own whenever diminishing production of hormone by the ovary causes menopausal symptoms. It would seem wise, therefore, to supply estradiol in the same smooth, steady fashion to which the body is accustomed.

PROGYNON-B

PROGYNON-B, the benzoic acid ester of estradiol, parallels nature's own wisdom. Injected intramuscularly, the primary follicular hormone is released gradually and evenly from PROGYNON-B over a prolonged period—six to ten days depending on the amount administered.

PROGYNON-B (alpha-estradiol benzoate) in oil, ampules of 1 cc. containing 0.08, 0.16, 0.33, 1.0 and 1.66 mg. (500, 1000, 2000, 6000 and 10,000 R.U.); boxes of 3, 5, 6, 50 and 100 ampules; and in vials of 10 cc., each cc. containing 0.16 mg. (1000 R.U.) . . . 1 R.U. = 10 I.U. Boxes of 1 and 6 vials.

Trade-Mark PROGYNON-B—Reg. U. S. Pat. Off.

Schering CORPORATION · BLOOMFIELD, N. J.

IN CANADA, SCHERING CORP. LTD., MONTREAL

Industrial Medicine
Reg U. S. Pat. Off.

Industrial and Railway MEDICAL and SURGICAL Associations

Industrial Medicine is the Official Publication of these Organizations, but is independently Owned and Published

Industrial Medicine
Reg U. S. Pat. Off.

American Association of Industrial Physicians and Surgeons

THE object of this Association shall be to foster the study and discussion of the problems peculiar to the practice of industrial medicine and surgery; to develop methods adapted to the conservation of health among workers in the industries; to promote a more general understanding of the purposes and results of the medical care of employees, and to unite into one organization members of the medical profession specializing in industrial medicine and surgery for their mutual advancement in the practice of their profession.

President:
LOYAL A. SHOUDY, M.D.,
Bethlehem Steel Company,
Bethlehem, Pennsylvania.

President-Elect:
HENRY S. BROWN, M.D.,
Michigan Bell Telephone Company,
Detroit 26, Michigan.

First Vice-President:
HAROLD A. VONACHEN, M.D.,
Caterpillar Tractor Company,
Peoria, Illinois.

Second Vice-President:
A. H. WHITTAKER, M.D.,
Detroit Industries,
Detroit, Michigan.

Secretary:
FREDERICK W. SLOBE, M.D.,
2024 South Western Avenue,
Chicago 8, Illinois.

Treasurer:
EDWARD C. HOLMBLAD, M.D.,
28 East Jackson Boulevard,
Chicago 4, Illinois.

Managing Director:
EDWARD C. HOLMBLAD, M.D.,
28 East Jackson Boulevard,
Chicago 4, Illinois.

Associate Director:
T. E. ALLEN,
28 East Jackson Boulevard,
Chicago 4, Illinois.

Directors, 1945-1947

F. G. BARR, M.D.,
National Cash Register Company,
Dayton, Ohio.

J. NEWTON SHIRLEY, M.D.,
Arrow Mutual Liability Insurance Co.,
Watertown, Massachusetts.

JAMES M. CARLISLE, M.D.,
Merck & Company,
Rahway, New Jersey.

A. GIRARD CRANCH, M.D.,
Union Carbide & Carbon Corporation,
New York 17, New York.

EDWARD P. HELLER, M.D.,
Kansas City Industries,
Kansas City, Missouri.

A. L. BROOKS, M.D.,
Fisher Body Corporation,
General Motors Corporation,
Detroit, Michigan.

Directors, 1946-1948

EDWARD H. CARLETON, M.D.,
Inland Steel Company,
East Chicago, Indiana.

RUTHERFORD T. JOHNSTONE, M.D.,
Consultant—Occupational Diseases and Industrial Health,
727 West Seventh Street,
Los Angeles 14, California.

FREDERICK OETJEN, M.D.,
Jacksonville, Florida.

MELVILLE H. MANSON, M.D.,
American Telephone and Telegraph Co.,
195 Broadway,
New York 7, New York.

FRANK R. GRIFFIN, M.D.,
Medical Director,
Lever Brothers, Ltd., (Canada)
138 Sherbourne Street,
Toronto 2, Ontario.

O. A. SANDER, M.D.,
Consultant in Industrial Medicine,
Milwaukee, Wisconsin.

PERSONAL

DR. MAX BURNELL, Chairman, Genesee County Medical Society Cancer Committee, was recently presented a meritorious service award of the American Cancer Society for his leadership in cancer control during the last five years.

DR. FRANK L. RECTOR, formerly of Evanston, is the Secretary of the Cancer Control Committee for the Michigan State Medical Society. This is the first society to have a full time secretary on cancer control.

B. E. KUECHLE, vice-president and claims manager of Employers Mutual Liability Insurance Co., Wausau, has been elected to the board of trustees of the Industrial Hygiene Foundation of America, Pittsburgh. At the Annual Meeting in November he addressed the Foundation on "Legal and Administrative Handicaps in a Rehabilitation Program." The organization is a non-profit association of about 300 North and South American companies for the advancement of occupational health.

SENIOR SANITARY ENGINEER JOHN J. BLOOMFIELD, Assistant Chief of the Industrial Hygiene Division, U. S. Public Health Service, has been assigned to serve as special consultant to the Institute of Inter-American Affairs' labor inspection and control program in Bolivia. He will leave for Bolivia on January 31 and remain there for two months. He will assist with the formulation of codes to establish safe and healthful working conditions in Bolivian industry and to assist in clarfying occupational disease compensation laws. On request of the Bolivian government and in cooperation with its Ministry of Health and Labor, the Institute of Inter-American Affairs is engaged in setting up a program to improve the economic status of Bolivian workers and particularly miners. MR. BLOOMFIELD will work with the Institute's field party which has been in Bolivia since September, 1945.

DR. H. M. PATTERSON has been elected a fellow of the AMERICAN ASSOCIATION OF INDUSTRIAL PHYSICIANS AND SURGEONS. He is the first physician in Hawaii to be so honored and no one has deserved an honor more. During the past few years this specialty has rapidly been growing in importance. It now ranks in a class with The American College of Physicians. The Terri-

American Association of Industrial Physicians and Surgeons

1946-1947 Committees

Budget and Finance Committee
E. C. HOLMBLAD, M.D.—Chairman
F. W. SLOBE, M.D.
ROBERT GRAHAM, M.D.

Certification Committee
H. S. BROWN, M.D.—Chairman
F. T. MCCORMICK, M.D.

1947 Convention Committee
H. S. BROWN, M.D.—Chairman
N. E. LEYDA, M.D.

Medical Education Committee
M. H. KRONENBERG, M.D.—Chairman
T. LYLE HAZLETT, M.D.
R. T. JOHNSTONE, M.D.

Graduate Fellowship Committee
M. H. KRONENBERG, M.D.—Chairman
T. LYLE HAZLETT, M.D.
R. T. JOHNSTONE, M.D.

History Committee
L. A. SHOUDY, M.D.—Chairman
A. H. WHITTAKER, M.D.
O. P. GEIER, M.D.

Membership Committee
R. F. KURZ, M.D.—Chairman
E. P. HELLER, M.D.
E. A. IRVIN, M.D.

Past Presidents Committee
L. A. SHOUDY, M.D.—Chairman
W. A. SAWYER, M.D.
D. L. LYNCH, M.D.
C. D. SELBY, M.D.

Psychomatic Medicine Committee
E. A. IRVIN, M.D.—Chairman
L. H. WHITNEY, M.D.
EDWIN DEJONGH, M.D.

Publications and Editorial Policy Committee
W. A. SAWYER, M.D.—Chairman
C. P. MCCORD, M.D.
M. H. MANSON, M.D.

Rehabilitation Committee
H. A. VONACHEN, M.D.—Chairman
E. H. CARLETON, M.D.

Tuberculosis Committee
T. LYLE HAZLETT, M.D.—Chairman
C. F. LONG, M.D.
A. L. BROOKS, M.D.

Workmen's Compensation Committee
J. D. WILLEMS, M.D.—Chairman
BENJAMIN FREES, M.D.
J. J. WITTMER, M.D.

Visual Education Committee
F. W. SLOBE, M.D.—Chairman
A. G. CRANCH, M.D.
W. F. LYON, M.D.
J. D. WILLEMS, M.D.
H. GLENN GARDINER, M.D.

Qualifications Committee
F. E. POOLE, M.D.—Chairman
MELVIN N. NEWQUIST, M.D.

District Counsellors

"A"—MELVIN N. NEWQUIST, M.D.—Maine, Vermont, Connecticut, New Hampshire, Massachusetts, Rhode Island, New York, New Jersey, Maryland.

"B"—CHRISTOPHER LEGGO, M.D.—Virginia, Tennessee, Kentucky, North Carolina, South Carolina, Georgia, Alabama, Florida, Mississippi.

"C"—ALFRED H. WHITTAKER, M.D.—Michigan, Indiana, Ohio, Pennsylvania, West Virginia.

"D"—EDWARD P. HELLER, M.D.—Minnesota, Illinois, Missouri, Iowa, North Dakota, South Dakota, Nebraska, Montana, Wyoming, Wisconsin.

"E"—JAMES S. CHALMERS, M.D.—Colorado, New Mexico, Texas, Oklahoma, Arkansas, Louisiana.

"F"—RICHARD O. SCHOFIELD, M.D.—Arizona, Utah, Nevada, Idaho, Oregon, Washington, California.

as much as **200,000** units of penicillin directly at the site of vaginal infections • now possible with penicillin

vaginal suppositories SCHENLEY

new, completely painless, extremely convenient method of treating many stubborn infections * now available at your druggists' in boxes of **6** and **12**

indications:

Penicillin Vaginal Suppositories Schenley, each containing 100,000 units of penicillin calcium, are indicated in the treatment of infections of the lower genital tract, e.g., vaginitis, caused by, or associated with, penicillin-sensitive organisms, exclusive of the gonococcus. May also be of value in the prophylaxis of infections of the uterus, adnexa, and lower genital tract following surgical procedures, and as an adjunct in the management of trichomonas vaginalis infections.

SCHENLEY LABORATORIES, INC. EXECUTIVE OFFICES: 350 FIFTH AVENUE • NEW YORK 1, N.Y.

© Schenley Laboratories, Inc.

Association for the Advancement of Industrial Medicine and Surgery Inc.

PURPOSE: To disseminate accurate medical knowledge in reference to the diagnosis and treatment of all conditions arising out of and in the course of employment.

Officers

RUSSELL C. KIMBALL, M.D., President,
4 Irving Place, New York.
J. HUDSON BLAUVELT, M.D., Vice-President,
80 Maiden Lane, New York.
ROBERT BOGAN, M.D., Recording Secretary,
2 West 75th Street, New York.
JOSEPH L. RAMIREZ, M.D., Treasurer,
30 Fifth Avenue, New York.
MR. JOHN J. BLACKFORD, Executive Secretary,
370 Lexington Avenue, New York.

Executive Council

HALCYON HALSTEAD, M.D.,
Pelham Manor, New York.
ANTHONY AVATA, M.D.,
Hartford Accident & Indemnity Company, New York.
JOHN J. BROZDOWSKI, M.D.
FREDERICK H. ALBEE, M.D.,
New York.
COL. WILLIS W. LASHER,
West Point, New York.
JOHN J. WITTMER, M.D.,
Consolidated Edison Company, New York.
T. WALLACE DAVIS, M.D.
Borden Company, New York.
ROBERT F. BARBER, M.D.,
HARRY V. SPAULDING, M.D.,
General Accident Co., New York.

Component Society of the American Association of Industrial Physicians and Surgeons.

Central States Society of Industrial Medicine and Surgery

Officers 1946-47

MELVIN L. HOLE, M.D.,
Danville, Illinois,
President.
ROBERT M. GRAHAM, M.D.,
Chicago, Illinois,
President-Elect.
D. ORIS CONLEY, M.D.,
Streator, Illinois,
Vice-President.
FRANK P. HAMMOND, M.D.,
Chicago, Illinois,
Secretary-Treasurer.

Board of Governors

Terms to Expire 1947.
W. M. HARTMAN, M.D., Macomb, Ill.
ROLAND A. JACOBSON, M.D., Chicago.
LEWIS M. OVERTON, M.D., Des Moines, Iowa.
Terms to Expire 1948.
FRED M. MILLER, M.D., Chicago.
URBAN E. GEBHARD, M.D., Milwaukee, Wisc.
J. DANIEL WILLEMS, M.D., Chicago.
Terms to Expire 1949.
H. W. WELLMERLING, M.D., Bloomington, Ill.
THOMAS C. BROWNING, M.D., Chicago.
JOSEPH H. THOMAS, M.D., Chicago.

Component Society of the American Association of Industrial Physicians and Surgeons.

American Association of Railway Surgeons

F. M. SUMMERVILLE, M.D., Oil City, Pa.,
President.
EDWARD P. HELLER, M.D., Kansas City, Mo.,
Vice-President.
JOHN A. CAHILL, M.D., Dubuque, Iowa,
Vice-President.
J. E. HARRISON, M.D., Oklahoma City, Okla.,
Vice-President.
T. L. HANSEN, M.D., Chicago,
Treasurer.
R. B. KEPNER, M.D., Chicago,
Secretary.

Executive Board

A. R. METZ, M.D., Chicago, Chairman.
HARVEY BARTLE, M.D., Philadelphia.
JOHN R. NILSSON, M.D., Omaha, Neb.
J. ROSCOE MILLER, M.D., Chicago.
MILTON B. CLAYTON, M.D., Washington, D. C.
ROBERT M. GRAHAM, M.D., Chicago.

Territorial Association of Plantation Physicians

H. M. PATTERSON, M.D., Olaa, Hawaii, T. H.,
President.
M. A. BRENNECKE, M.D., Waimea, Kauai, T. H.,
Vice-President.
P. H. LILJESTRAND, M.D., Aiea, Oahu, T. H.,
Secretary-Treasurer.

Component Society of the American Association of Industrial Physicians and Surgeons.

torial Association of Plantation Physicians is a component society of The National Association. The work you have done ranks with the best in the industry. The aim of "Industrial Medicine" is not merely to prevent accidents or occupational disease, nor merely to care for service connected injuries. Its aim is to watch employees and diagnose and correct early any chronic disease or defect which might later become a handicap. More than that the program aims by teaching to show men how to become healthier. A man might live as long but very inefficiently, compared with another. The full application of known knowledge can get for anyone more out of life than most get at present. The full industrial program also aims at helping the wife and children to remain well and become healthier and stronger. The plantation program of better diets, gardens and fruit trees in laborers' yards and better housing, are all a part of good industrial medicine. Remember, if the war hadn't stopped the building program, and stopped all sources of material there would be none of the old houses left. Hence the injustice of picturing in the public press some of the oldest houses and telling the public, "What shacks the laborers are forced to live in." The war is responsible for those. Why not mention all the wonderful villages along the Hamakua Scotch Coast? The plantation hospital and clinic program is one of the best in rural America. The extensive recreation program is also part of the broad health program. But whatever our comments are, the record must speak for itself. On the plantations, the infant and maternal mortality is the lowest in the world for any comparable group of rural laborers. The death rate is low. The accdent rate is low. The insanity rate is low. The TBC rate is rapidly declining. The results prove that the health program has been successful. Let us take pride in this record, and keep constantly trying to improve it.

—Editorial in *Plantation Health*, Aiea, Oahu, T. H., October, 1946.

GENERAL

FEWER deaths occurred in the United States in 1945 than in either of the two preceding war years, according to figures released by the U. S. Public Health Service. A total of 1,401,719 deaths were reported in the United States in 1945, as compared with 1,411,338 in 1944, 1,459,544 in 1943 and 1,385,187 in 1942. In the first 10 months of 1946 there were an estimated 1,162,000 deaths in the United States, as compared with 1,144,273 in the first 10 months of 1945. All figures are for the continental United States and exclude deaths among the armed forces outside of the country.

New York State Society of Industrial Medicine

1942-43 Officers

O. A. BRENENSTUHL, M.D., President.
P. K. MENZIES, M.D., Vice-President.
PHILIP L. FORSTER, M.D., Treasurer.
FRANK E. REDMOND, Executive Secretary

Directors

DR. H. H. BAKER, Rochester.
423 Granite Bldg.
DR. O. A. BRENENSTUHL
345 Hamilton St., Albany
DR. PHILIP L. FORSTER, Albany
367 State St.
DR. CHAS. D. SQUIRES, Binghamto
28 Conklin Ave.
DR. FRANCIS J. RYAN, Syracuse
New York State Railways.
DR. B. J. SLATER, Rochester.
Eastman Kodak Company
DR. L. W. LOCKE, Utica.
288 Genessee St.
DR. A. M. DICKINSON, Albany.
New York Central R. R.
DR. M. S. BLOOM, Binghamton
Dunn & McCarthy.
DR. E. MACD. STANTON, Schenectady.
American Locomotive Company.
DR. DONALD C. O'CONNOR, Buffalo.
International Railways.
American Radiator Co.
DR. RICHARD S. FARR, Syracuse.
Consulting Orthopedist.
DR. C. W. WOODALL, Schenectady.
146 Barrett St.
DR. JOHN L. NORRIS, Rochester.
Eastman Kodak Company, Kodak Park
DR. PAUL B. JENKINS, Binghamton.
141 Main St.
DR. E. A. VANDER VEER, Albany
28 Eagle St.
DR. OTTMAR W. FREY, Oneida.
Oneida Ltd.
DR. HAROLD C. LYMAN, Utica.
250 Genessee St.
DR. P. K. MENZIES, Syracuse.
511 Medical Arts Bldg.
DR. FRED C. SABIN, Little Falls.
23 W. Ann. St.
DR. REEVE M. BROWN, Buffalo.
Chevrolet-Motor and Axle
Div. of General Motors.

The Industrial Doctor

Official Section of the New York State Society of Industrial Medicine. Now combined with INDUSTRIAL MEDICINE

Published under supervision of the Ways and Means Committee of the New York State Society of Industrial Medicine. Editorial office, F. E. REDMOND, Managing Editor, 361 Delaware Avenue, Buffalo, N. Y. Articles herein do not necessarily reflect the opinion or policy of this journal nor of the New York State Society of Industrial Medicine.

FRANK E. REDMOND, Managing Editor
361 Delaware Ave., Buffalo New York.

New England Conference of Industrial Physicians

Officers

STANLEY SPRAGUE, M.D., President
Plant Physician,
J. & P. Coates R. I., Inc.,
107 Broadway,
Pawtucket, Rhode Island.
J. ROBERTSON KNOWLES, M.D., Vice-President
Medical Director, Boston & Maine R.R.,
North Station Building, Boston.
J. ALLAN THOMPSON, M.D., Sec'y-Treasurer,
Medical Officer,
New Engand Tel. & Tel. Co.,
245 State Street, Boston.

Board of Directors

DONALD V. BAKER, M.D.,
Lever Brothers,
Cambridge, Mass.
JAMES I. ROBERTS, M.D.,
Medical Director,
New England Power Service Co.,
441 Stuart Street, Boston.
TIMOTHY F. ROCK, M.D., F.A.C.S.,
Nashua Mfg. Co.,
77 Main Street,
Nashua, New Hampshire.
ROY V. SANDERSON, M.D.,
Plant Physician, Winstead Hosiery,
570 Main Street,
Winstead, Conn.
HENRY B. MOOR, M.D., F.A.C.S.,
Medical Director, Gorham Mfg. Co.,
147 Angel Street,
Providence, Rhode Island.

How to use Surgitube

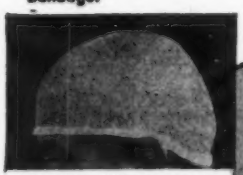
1. Pull one end over finger, twist bandage a half turn, then . . .

2. Open free end of bandage and . . .

3. Double back over first part, then . . .

4. Bring ends of bandage together, apply adhesive tape to hold in place.

For Fingers—Bulky old style bandage contrasted to neat new Surgitube bandage.



For Head Bandage use Surgitube No. 5.

THIS AMAZING NEW GAUZE BANDAGE

offers a quicker, easier way to bandage extremities

Surgitube makes possible better, neater and more comfortable bandaging for all extremities with great saving of time, and an economy of material up to 800%. It has been used with completely satisfactory results for several years in civil, industrial and government hospitals; by surgeons, physicians, chiropodists and nurses.

Surgitube is seamless gauze fabric in tubular form, in rolls of 50 yards each, packaged in handy dispenser. It is made in five sizes for bandaging fingers, toes, hands, feet, arms, shoulders, legs, breasts and head. Its form and flexibility makes for easier application and removal, plus perfect conformation to all contours without binding.

a twist and it fits

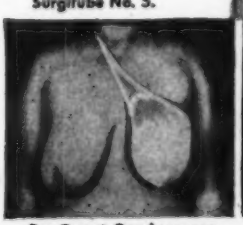
Surgitube

Manufactured Only By

SURGITUBE PRODUCTS CORPORATION

NEW YORK 61, N. Y.

Sole Owners of Surgitube U. S. A. Patents and Trade Marks



For Breast Bandage use Surgitube No. 3 or No. 5.

For Shoulder Bandage use Surgitube No. 3 or No. 5.

For Foot and Ankle Bandage use Surgitube No. 3.

For Knee Bandage use Surgitube No. 3.

For Hand or Wrist Bandage use Surgitube No. 3 or No. 4

Chicago Society of Industrial Medicine and Surgery

1946-47 Officers

KARL G. RUNDSTROM, M.D., Chicago, President.
DWIGHT I. GEARHART, M.D., Chicago, Vice-President.
FRANK P. HAMMOND, M.D., Chicago, Secretary-Treasurer.

Board of Governors

Terms to Expire 1947.
JOSEPH H. THOMAS, M.D., Chicago.
ROLAND A. JACOBSON, M.D., Chicago.
O. WALTER REST, M.D., Chicago.

Terms to Expire 1948.
CHARLES DRUECK, JR., Chicago.
FELIX JANSEY, M.D., Riverside, Ill.
BURTON C. KILBOURNE, M.D., Chicago.

Terms to Expire 1949.
J. DANIEL WILLEMS, M.D., Chicago.
T. R. HINCHION, M.D., Chicago.
CLARENCE W. HENNAN, M.D., Chicago.

Association of Railway and Industrial Physicians and Surgeons of Kansas City

Officers

E. P. HELLER, M.D., President.
C. N. LINDQUIST, M.D., Secretary-Treasurer.

Directors

MATTHEW W. PICKARD, M.D.
JOHN E. CASTLES, M.D.
F. L. FEIERABEND, M.D.
VINCENT T. WILLIAMS, M.D.

Delegate to A.A.I.P. & S. Convention:
E. P. HELLER, M.D.

Component Society of the American Association of Industrial Physicians and Surgeons.

Western Association of Industrial Physicians and Surgeons

Officers

JOHN D. BALL, M.D., F.A.C.S., President, Spurgeon Building, Santa Ana, California.

WILLIAM P. SHEPARD, M.D., Vice-President, Asst. Sec'y and Pacific Coast Welfare Director, Metropolitan Life Ins. Co., 600 Stockton Street, San Francisco, California.

J. M. MCCULLOUGH, M.D., Treasurer, Plant Physician, Union Oil Company, Oleum Plant, California and Hawaiian Sugar Refining Corp., Ltd., Crockett, California.

RODNEY R. BEARD, M.D., M.P.H., Secretary, Medical Director, Pacific-Alaska Division, Pan American Airways, San Francisco.

Directors

ROBERT T. LEGGE, M.D.—1947
6 Roble Road, Berkeley, California.

JOHN E. KIRKPATRICK, M.D.—1948
516 Sutter Street, San Francisco, California.

ALFRED C. DICK, M.D.—1949
La Jolla, California.

FENN E. POOLE, M.D.—1950
Lockheed Aircraft Corporation, Burbank, California.

Chairman, Board of Directors
RICHARD O. SCHOFIELD, M.D., F.A.C.S., 1027 Tenth Street, Sacramento, California.

Component Society of the American Association of Industrial Physicians and Surgeons.

Florida Association of Industrial and Railway Surgeons

Officers

F. A. VOGT, M.D., President.
LLOYD J. NETTO, M.D., President-Elect.
E. W. CULLIPHER, M.D., Vice-President.
J. H. MITCHELL, M.D., Secretary-Treasurer.

Directors

A. M. BIDWELL, M.D. FRANK D. GRAY, M.D.
W. H. CHAPMAN, M.D. F. L. FORT, M.D.

Component Society of the American Association of Industrial Physicians and Surgeons.

HENRY J. KAISER'S Northern Permanente Foundation has leased the Vanport City (Oregon) Hospital, which was opened in Kaiser's Oregon shipyards. This $420,000 125-bed hospital is a fully equipped unit, furnished to provide surgery, obstetric, and general care. Some 300 people are employed at capacity operation. Since the wars' end the hospital has been operated by the Vanport Housing Administration, but has constantly faced closing because of financial difficulties necessitating Federal subsidy. When announcement was recently made that this must definitely end on January 1, 1947, and the hospital be closed, rapid negotiations were begun by Mr. Kaiser's chief medical director, DR. SIDNEY R. GARFIELD, who, on behalf of the Foundation, offered to take over operation of the facilities to insure adequate medical care for the area, and continue employment. Acceptance by the Vanport commission was unanimous. Under terms of the Kaiser year-to-year lease there will be no further government subsidies. DR. WALLACE NEIGHBOR, associated with Kaiser medical activities since construction of Grand Coulee Dam in 1938, has been appointed by GARFIELD as Resident Medical Director.

Skin Troubles

THOUSANDS of housewives suffer from occupational dermatitis (housewives' eczema) caused by soap or soap powders, and much of the dryness, scaling and redness on their hands and arms could be prevented by proper care. DR. SAMUEL M. PECK, of New York City, so reported in a paper on dermatitis given in the Palmer House yesterday at the annual clinical conference of the Chicago Medical Society. He offered a simple answer to the problem of housewives, soda clerks, dishwashers, and others: Rubber gloves, closed at the wrists by a sleeve buttoned over the top of the glove. If this doesn't prevent the eczema, he urged use of a soap substitute and frequent lubrication of the hands with ointment containing animal or vegetable fats. DR. PECK also laid down rules by which industrial workers could escape dermatitis. These included daily cleaning of machines, filtering of oil to eliminate metal slivers, daily showers, clean towels and clothing daily, clean waste near the machines, and, in the case of workers in cement plants, dust control, goggles or respirators, and enclosure of machines.

—*Chicago Tribune*, March 6, 1947.

Western Association

THE WESTERN ASSOCIATION OF INDUSTRIAL PHYSICIANS AND SURGEONS will hold its Sixth Annual Meeting at Hotel Biltmore, Los Angeles, on Tuesday, April 29. For details address DR. RODNEY R. BEARD, Secretary, c/o Pan American World Airways, San Francisco 19.

Rhode Island Society of Industrial Physicians and Surgeons

Officers

President
CHARLES L. FARRELL, M.D., Collyer Insulated Wire Company, Pawtucket.

Vice-President
RICHARD F. MCCOART, JR., M.D., Universal Winding Co., Cranston; Textile Finishing Co., Providence.

Secretary
JAMES P. DEERY, M.D., Division of Industrial Hygiene, State Department of Health, Providence.

Treasurer
ROBERT T. HENRY, M.D., Newman Crosby Company, Pawtucket.

Board of Directors

THOMAS A. EGAN, M.D., New Haven Railroad, Providence.

FRANK A. MERLINO, M.D., Providence Tuberculosis League, Division of Industrial Tuberculosis.

REMINGTON P. CAPWELL, M.D., Federal Products Co., Providence. Whittet-Higgins Co., Providence.

EDWARD F. DOUGHERTY, M.D., Liberty Tool & Gauge, Providence. Colonial Knife Company, Providence.

Section of the New England Conference of Industrial Physicians.

Milwaukee Association of Industrial Physicians and Traumatic Surgeons

Officers

S. H. WETZLER, M.D., President
606 W. Wisconsin Ave., Milwaukee.

Vice-President
ELSTON L. BELKNAP, M.D., 231 W. Wisconsin Ave., Milwaukee.

Secretary-Treasurer
GEORGE H. HOFFMANN, M.D., 7006 W. Greenfield Ave., Milwaukee.

Board of Directors

U. E. GERHARD, M.D., 1332 S. 16th Street, Milwaukee.

H. G. OAKLAND, M.D., 1651 N. 12th St., Milwaukee.

EDWARD QUICK, M.D., 411 E. Mason St., Milwaukee.

DAVID MEHIGAN, M.D., 231 W. Wisconsin Ave., Milwaukee.

New Jersey Association of Industrial Physicians and Surgeons

Officers

J. M. CARLISLE, M.D., President. Merck & Co., Rahway.

Vice-President
A. F. MANGELSDORF, M.D., Martinsville.

M. E. LOWELL, M.D., Treasurer. 434 Summit Ave., Westfield.

AUGUSTUS GIBSON, M.D., Secretary. Merck & Co., Rahway.

Directors

DONALD O. HAMBLIN, M.D., American Cyanamid Co., 39 Rockefeller Plaza, New York City.

RUSSELL G. BIRRELL, M.D., Standard Oil Co. of New Jersey, Bayway Refinery, Linden.

E. E. EVANS, M.D., E. I. duPont de Nemours, Dye Works Hospital, Deepwater.

WM. H. MCCALLION, M.D., F.A.C.S., General Aniline Co., Elizabeth.

Component Society of the American Association of Industrial Physicians and Surgeons.

Michigan Association of Industrial Physicians and Surgeons

Officers

A. L. BROOKS, M.D., President. 601 Piquette Ave., Detroit.

J. DUANE MILLER, M.D., President-Elect. 604 Metz Building, Grand Rapids.

DON F. KUDNER, M.D., Vice-President. 435 Wildwood, Jackson, Michigan.

M. W. SHELLMAN, M.D., Secretary-Treasurer. Metz Building, Grand Rapids.

Board of Directors

HENRY COOK, M.D., Flint.
R. H. DENHAM, M.D., Grand Rapids.

Component Society of the American Association of Industrial Physicians and Surgeons.

rheumatic fever prophylaxis

Sulfamerazine—the systemic sulfonamide of smaller dosage, developed by Sharp & Dohme Research—is the choice of many clinicians for control of hemolytic streptococcal infections and prevention of recurrences of rheumatic fever. A recent report,* reviewing sulfonamide prophylaxis of over 900 patients, states:

". . . sulfamerazine appears to be the drug of choice. The relatively slow excretion of sulfamerazine by the kidneys makes possible the maintenance of effective blood levels by administration of a single daily dose. It is believed that more extensive use of sulfamerazine will reduce still further the chances of significant toxicity."

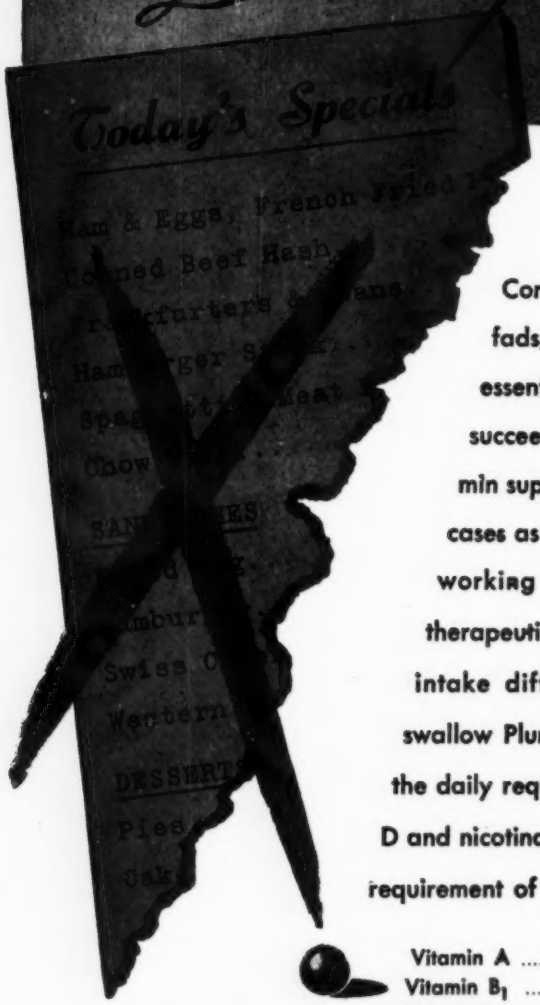
SHARP & DOHME

Care must be exercised in the choice of cases for individual or institutional prophylaxis of rheumatic fever, but when susceptible strains of hemolytic streptococci are prevalent in an area, sulfonamide prophylaxis may reduce the number of cases of hemolytic streptococcal infection. • For oral administration 0.5-Gm. tablets, bottles of 100, 500 and 1,000; ¼-pound packages of powder. For intravenous administration: Sodium Sulfamerazine, 5-Gm. vials of sterile powder; 50-cc. ampuls of a 6% solution. Sulfamerazine chemical reagent, vials containing 1 Gm. Sharp & Dohme, Philadelphia 1, Pa.

*M. Clin. North America 30:489-509, May 1946.

SULFAMERAZINE S & D

Dietary correction reinforced



Correction of faulty dietary habits and fads, or of plain ignorance with regard to essential dietary needs, does not always succeed for long. Reinforcement with vitamin supplements is clearly indicated in such cases as well as in patients whose business, working or home conditions or whose therapeutic diets make adequate vitamin intake difficult . . . One small, easy to swallow Pluravit pellet supplies more than the daily requirement of vitamins A, B_1, C, D and nicotinamide and the minimum daily requirement of B_2 (G):

Vitamin A	5000 U.S.P. units
Vitamin B_1	2 mg.
Vitamin B_2	2 mg.
Vitamin B_6	0.5 mg.
Vitamin C	50 mg.
Vitamin D_2	1000 U.S.P. units
Nicotinamide	20 mg.
Calcium pantothenate	1 mg.

WINTHROP

BOTTLES OF 30 AND 100 PELLETS

PLURAVIT Winthrop CHEMICAL COMPANY, INC.
NEW YORK 13, N. Y. · WINDSOR, ONT.

PLURAVIT, trademark Reg. U. S. Pat. Off. & Canada

POOR CIRCULATION

When the blood circulation in the extremities is poor, and in cases of claudication, leg ulcers and other symptoms of peripheral vascular disease, relief is frequently obtained by intermittent rhythmic constriction as provided by the—

BURDICK RHYTHMIC CONSTRICTOR

Experiments demonstrate that when sub-diastolic pressure is applied intermittently to the proximal portion of an extremity, there is a filling and stretching of the capillary bed. With the Rhythmic Constrictor intermittent venous occlusion is produced automatically at such pressure and time periods as may be indicated.

In many localities the Burdick RC-2 Rhythmic Constrictor is available on prescription for patient's use at home at a moderate rental rate.

The RC2 Rhythmic Constrictor is self contained and easily portable, and so simple and quiet in operation many patients use it while sleeping. Two cuffs may be operated at one time if desired.

The BURDICK CORPORATION
MILTON, WISCONSIN

THE BURDICK CORPORATION
Milton, Wisconsin

Please send me information concerning the Burdick Rhythmic Constrictor as checked below:

☐ Description, clinical data and method of use.

☐ Details of Physician's Prescription Rental Service Plan and dealer's name.

NAME .....M.D.

ADDRESS .....

CITY ..... STATE.....

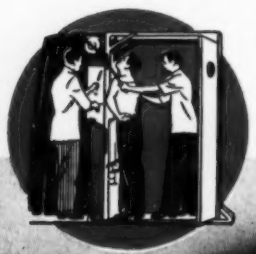
POWERS PRESENTS

As Part of a Complete X-Ray Service

THE MAGAZINE CASSETTE

The capacity of standard chest-x-ray-equipment can be effectively doubled with the use of the *Powers Magazine Cassette.* Loaded like an ordinary camera with Powers X-Ray Paper, the Powers Cassette makes as many as 50 radiographs without changing or reloading. The roll cassette thus affords great savings in time and expense, and is rented by the company to the user. Other features of the complete Powers X-Ray Service are:

POWERS X-RAY PAPER, exceptionally economical. Available in standard cut sheet sizes, it has high diagnostic quality, proved by over 14 years of use in making more than 4,500,000 chest radiographs.



POWERS CASE-FINDING TEAMS using mobile, modern equipment provide full size 14" x 17" radiographs—operating anywhere and using regular 220 volt, A.C. power, enabling the complete job to be done with minimum expense and trouble and maximum speed.

For full details on the complete Powers X-Ray Service or any one feature of it, write to

Over half a million chest x-rays taken last year on Powers X-Ray Paper

POWERS X-RAY PRODUCTS

POWERS X-RAY PRODUCTS, Inc.

GLEN COVE, L. I., N. Y.

Group Radiography

Even in advanced stages of chronic arthritis, adequate systemic therapy, combined with optimal nutrition and such adjuvant measures as physiotherapy and orthopedic appliances, can do much to abolish pain and restore useful function.

SYSTEMIC REHABILITATION
FUNCTION RESTORED

The combined pharmacodynamic and nutritional actions of its nine constituents make Darthronol an important integral part of any complete program of systemic rehabilitation of the arthritic.

J. B. ROERIG and COMPANY
536 Lake Shore Drive • Chicago 11, Illinois

EACH CAPSULE CONTAINS:
Vitamin D (Irradiated Ergosterol).. 50,000 U.S.P. Units
Vitamin A (Fish-Liver Oil)..... 5,000 U.S.P. Units
Ascorbic Acid..... 75 mg.
Thiamine Hydrochloride..... 3 mg.
Riboflavin..... 2 mg.
Pyridoxine Hydrochloride..... 0.3 mg.
Calcium Pantothenate..... 1 mg.
Niacinamide..... 15 mg.
Mixed Tocopherols..... 4 mg.
(Equivalent to 3 mg. of synthetic Alpha Tocopherols)
DARTHRONOL

A ROERIG *Preparation*

DARTHRONOL

For the Arthritic

B-P
SURGICAL KNIFE HANDLES

Outstanding for their durable fabrication and capacity to accurately and firmly fit every B-P Blade, their combined qualities of practical design, balance and finish are as distinctly individual as a fingerprint.

Genuine B-P Handles may be readily distinguished by the Gothic Arch pattern of the distal ends . . . a time-conserving aid in blunt dissection. As quality products, they are built for long periods of satisfactory service . . . designed to resist the damaging effects of hard, constant use. In the end, more economical by far.

AVAILABLE PATTERNS INCLUDE—

Nos. 3, 4 and 7.....For general surgical use.
Nos. 3L and 4L.....Elongated handles for deep surgery.
No. 3LA .....An offset, elongated handle for use in hysterectomies.
No. 9.....A small, finely balanced handle for ophthalmic, plastic and minor surgical use.

Ask your dealer

BARD-PARKER COMPANY, INC.
Danbury, Connecticut

A BARD-PARKER PRODUCT

PRODUCTION SCHEDULES CAN SLIP ON SOAP!

SOAP, TREACHEROUS SOAP can help upset the best-laid plans of management by slowing up high-stepping work schedules to a point where it hurts.

Not by bodily tripping up your workers, but through the impaired manual efficiency caused by a hand cleanser with an overdose of skin-injuring alkali.

With Lan-O-Kleen this isn't so! Lan-O-Kleen, a powdered soap, contains no harsh ingredients to harm the skin. Wherever soil and dirt dig deepest, Lan-O-Kleen loosens them with gentle thoroughness. Does it with the sponge-like action of its corn-meal granules—not by grinding attack on the skin surfaces.

Super-fatted with a generous degree of lanolin, Lan-O-Kleen gives extra protection against the skin drying out—leaving hands with a pliable, ready-to-work feeling.

Make Lan-O-Kleen a safety stand-by at workers' washstands. Consult one of over 350 West trained representatives throughout the country.

WEST DISINFECTING Company

Products That Promote Sanitation

42-16 West Street, Long Island City 1, New York, N. Y.

BRANCHES IN PRINCIPAL CITIES OF UNITED STATES AND CANADA

CLEANSING DISINFECTANTS · INSECTICIDES · KOTEX VENDING MACHINES
PAPER TOWELS · AUTOMATIC DEODORIZING APPLIANCES · LIQUID SOAPS

White's

White

LABORATORIES, INC. Pharmaceutical Manufacturers, Newark 7, N. J.

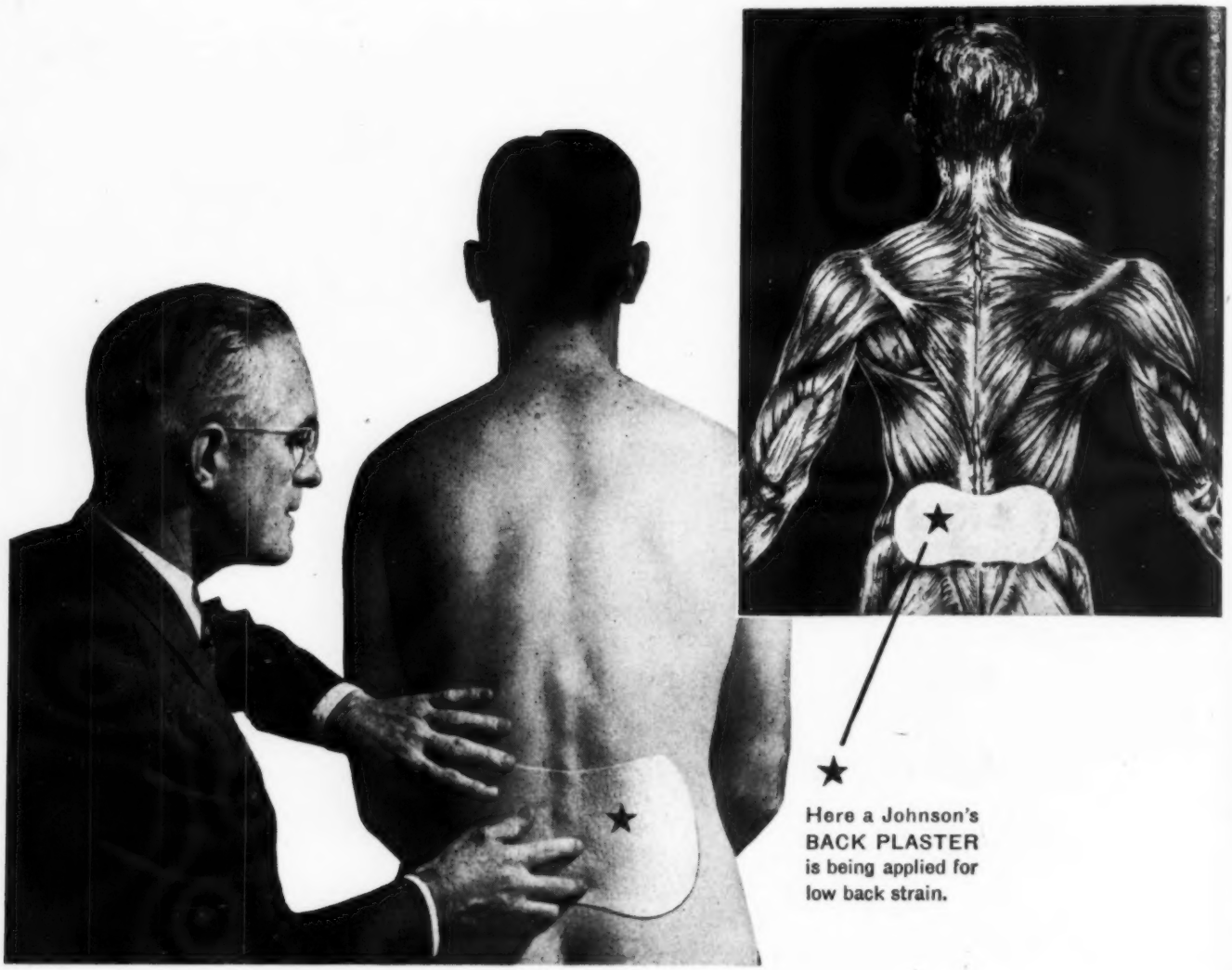
swifter healing . . . .

Mounting clinical evidence emphasizes the value of topically applied vitamins A and D for prevention and treatment of postpartum fissured nipples, and as a notably effective aid to healing in all surface lesions involving epithelial denudation.

Therapeutic advantages: promotes healthy granulation and rapid epithelization, inhibits infection, minimizes skin grafting, destroys no epithelial elements, does not cause contractures, forms no tenacious coagulum.

White's Vitamin A and D Ointment provides the natural vitamins A and D, derived from fish liver oils and in the same ratio as found in cod liver oil, in an appropriate lanolin-petrolatum base. Mildly fragrant, free from excess oiliness; keeps indefinitely at ordinary temperature. Ethically promoted—not advertised to the laity. Available in ½ oz. tubes; 8 oz. and 16 oz. jars and 5 lb. containers.

E's *Vitamin* A *and* D **ointment**



Here a Johnson's BACK PLASTER is being applied for low back strain.

Have you considered these advantages of Johnson's BACK PLASTER?

FROM the viewpoints of medical efficacy and practical convenience, these plasters merit your consideration for backache ailments.

Therapeutically, they do *three* jobs: They provide mild counter-irritation which induces local and reflex hyperemia—helping to relieve congestion and muscle pain. They offer the antispasmodic medication of belladonna—which helps ease muscular cramps and pains. They aid immobilization—give a strapping and supporting effect which tends to reduce pain and irritation.

They are practical for you, practical for the patient. They are safe and convenient. They give continuous slow treatment for several days. They save busy doctors extra visits. The Johnson & Johnson name is accepted by patients.

Johnson's BACK PLASTERS are particularly valuable for low back strain, sacroiliac arthritis, myositis, lumbosacral fascitis and intercostal neuralgia.

* * *

Where the greater spasmolytic effect of belladonna is indicated, use the Johnson & Johnson BELLADONNA PLASTER with full U.S.P. belladonna strength.

Write for liberal free supply of Johnson's BACK PLASTERS and BELLADONNA PLASTERS. You will find that both are helpful in many backache conditions. Johnson & Johnson, New Brunswick, N. J.

Johnson's BACK PLASTER

petrolatum to promote optimal conditions for burn healing...

'VASELINE' PETROLEUM JELLY
is the world's leading brand of
PETROLATUM U.S.P.

With normal nutrition and absence of infection, the burned surface heals.

To prevent potential infection, and thus promote optimal conditions for burn-healing, prompt covering of the wound is imperative . . . with a dressing impervious to infection, non-injurious to cells, non-adherent to the burned tissue.[1,2,3]

Now . . . as a result of civilian disaster and burn tragedies of the war . . . a new treatment for burns has been developed.

In addition to plasma, and chemotherapy internally or intravenously,[1] burn surfaces are promptly covered with dressings impregnated with petrolatum. With these non-adherent dressings, wounds can be left to "rest" undisturbed for days, without the necessity for frequent changes of dressings...without the accompanying re-exposure of the burn surface to infection, too.

'Vaseline' Petroleum Jelly dressings, non-injurious to cells, protect against surface infection from the air . . . help relieve pain from exposed sensory nerve endings...promote optimal conditions for healing of the burn surface.

'Vaseline' Petroleum Jelly, for hospital and professional use, is available in tubes and jars at drug stores everywhere. 'Vaseline' Borated Petroleum Jelly in tubes only.

1. J.A.M.A. 125:536–543 (June 24) 1944
2. J.A.M.A. 125:612–616 (July 1) 1944
3. Ann. of Surg. 117-885 (June) 1943

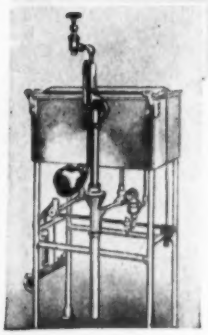
Vaseline
REG. U.S. PAT. OFF.
PETROLEUM JELLY

MADE ONLY BY CHESEBROUGH MANUFACTURING COMPANY, CONS'D,
NEW YORK, N. Y.

For Equipment that Excels

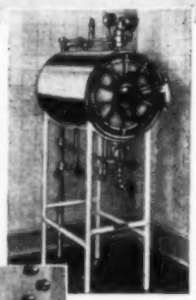
Specify "AMERICAN"

Demand the finest for dependable performance to insure the more satisfactory operation and maintenance of your CENTRAL STERILE SUPPLY, SURGICAL SUPPLY and OPERATING ROOM SERVICES.



INSTRUMENT and UTENSIL STERILIZERS . . .

which provide for complete utilization of available power and automatic control of rate of heating. EXCESS VAPOR REGULATOR eliminates losses usually sustained through wasteful creation and disposal of steam.

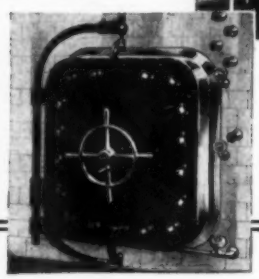


DRESSING and INSTRUMENT STERILIZERS . . .

precision equipment of functional dependability. SMALL INSTRUMENT STERILIZERS in portable and cabinet models featuring "burn-out-proof" safety.

BULK STERILIZERS . . .

a product of wartime engineering efficiency. Unexcelled for disinfection of dry surgical supplies, mattresses, bedding, etc.



A complete line of Sterilizers, Autoclaves and Stills for every hospital need.

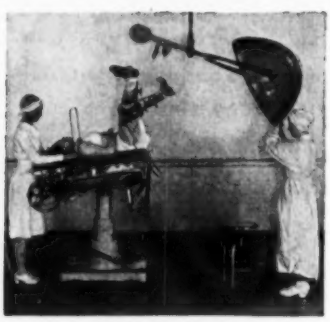
"AMERICAN" OPERATING TABLES

Model 1075—Offering outstanding advantages in precise surgical posturing, this superior Table is designed to facilitate unprecedented accessibility and convenience for the surgeon in the many postures of the surgical catagory.

This Table features Head End Control which enables the anesthetist—while remaining seated—to precisely select the proper table position to correspond with the anatomical posture called for by the operating surgeon. Exclusive innovations also include Indicator Dial and Position Selector Control which eliminate delay and confusion in establishing the precise surgical posture desired . . . and with no interference with the surgical team.

"American" presents a complete line of Major and Minor Operating Tables, Obstetrical and Fracture Tables.

NEPHRECTOMY



GYNECOLOGIC

The "AMERICAN" postwar LUMINAIRE

A unique combination of Track and Offset Mounting is exclusively featured to provide for height adjustment over the operative site, and for complete flexibility of illumination from any desired angle in the vertical and horizontal planes.

Additional engineering highlights include CHOICE OF LIGHT INTENSITIES before or during operation • UNSURPASSED SHADOW REDUCTION • DIAGNOSTIC COLOR CONTROL • SCIENTIFIC HEAT CONTROL • HEAD END and DUAL CONTROL.

A complete line of Major and Minor Surgical Lights are available . . . ceiling suspended and portable types.

REQUEST OUR REPRESENTATIVE TO CALL
or write today for descriptive literature

AMERICAN STERILIZER COMPANY

Erie, Pennsylvania

Ulcer Therapy...

A Service to Physicians for Modern Management of Peptic Ulcer

Doctors are urged to avail themselves of the many aids in peptic ulcer diagnosis and treatment which Wyeth offers—

•**Diagnostic charts**—for recording each case history in your office. Complete, compact; supplied without cost.

•**Technical motion pictures** in full color, available to medical groups—"Peptic Ulcer," on diagnosis and management, with detailed illustration of surgical techniques, filmed at the Lahey Clinic, Boston; "Intragastric Drip Therapy for Peptic Ulcer," from Mt. Sinai Hospital, New York, which includes an unprecedented series of color views of digestive and healing processes.

•**Intragastric drip** apparatus, for refractory or bleeding cases—placed in more than 1500 hospitals.

•**Diet sheets**—printed without advertising, and supplied gratis for patients' use.

And ...a complete line of antacid products to meet individual requirements...

•**Amphojel®** (Alumina Gel Wyeth)—standard prescription for peptic ulcer.

•**Amphojel** with Magnesium Trisilicate—for ulcer patients with constipation.

•**Amphojel** with Mineral Oil—for ulcer patients with constipation.

•**Amphojel** without flavor—for those who prefer an unflavored preparation.

•**Amphojel Tablets** in moisture-proof envelopes—for the convenience of ambulatory patients.

•**Phosphaljel®** (Aluminum Phosphate Gel)—preferred by many physicians, especially in cases of marginal ulcer.

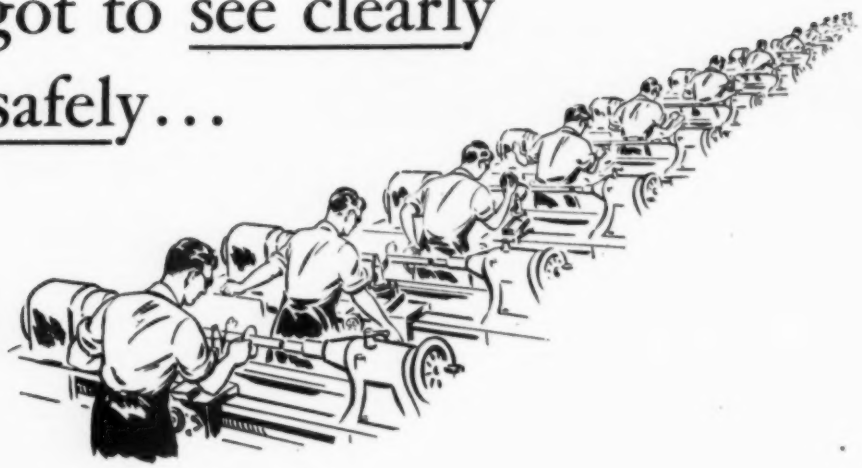
•**Lactamin®**—a complete, pre-digested protein supplying all essential amino acids.

Wyeth®

WYETH INCORPORATED, PHILADELPHIA 3, PA.

® Reg. U. S. Pat. Off.

They've got to see clearly to work safely...



● A complete eye safety program must include *protection* and *correction.* Protection from flying particles, dust, and fumes, of course. But industrial studies show that at least half of all workers need eyesight correction. No worker who cannot see clearly can work safely (or efficiently). Industrial eyewear, incorporating correction professionally prescribed to the requirements of every job, will improve your safety record —and increase productivity. Your Bausch & Lomb distributor offers prescription service on industrial eyewear—*protection* and *correction* for your workers.

SAFETY FACT-FINDING CASE HISTORY...

ABOVE Ortho-Rater Visual Standards

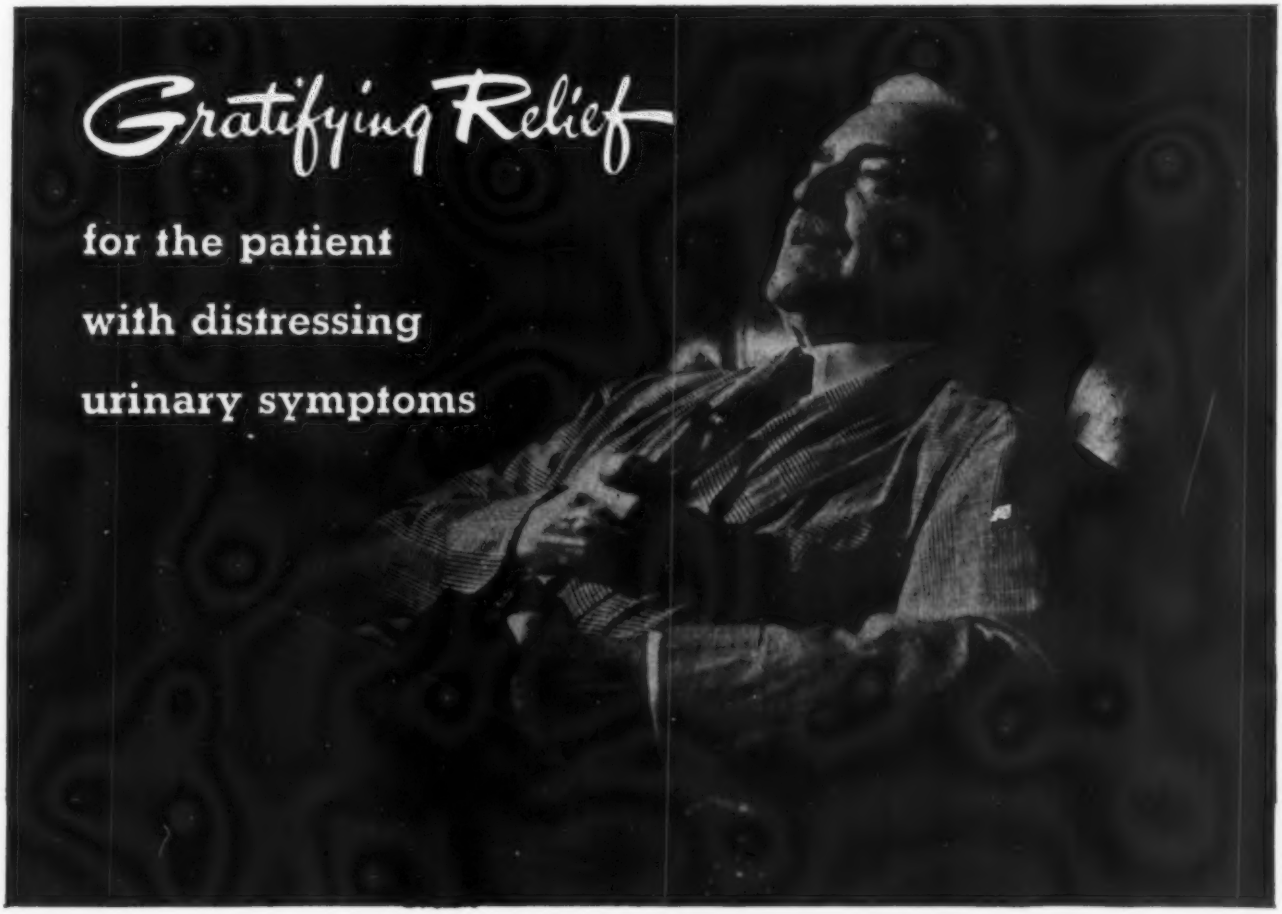
BELOW Ortho-Rater Visual Standards

ACCIDENT-PRONE WORKERS *are identified by the Bausch & Lomb Industrial Vision Service with the Ortho-Rater fact-finding system. From medical records in one plant, 42 workers with high accident-frequency records were selected for study. Of the 42 workers, only 11 met Ortho-Rater visual performance standards; 31 failed to meet the standards; a basis was set for selecting accident-free workers for hazardous jobs. The B&L Industrial Vision Service also contributes to increased production, improved quality, reduced labor turnover, and lower training costs.*

Write for descriptive bulletin A-591.

BAUSCH & LOMB

OPTICAL COMPANY ROCHESTER 2, N.Y.



PYRIDIUM, administered orally in a dosage of 2 tablets *t.i.d.*, will promptly relieve distressing urinary symptoms in a large percentage of ambulant patients, thereby permitting them to pursue normal activities without undue disturbance.

The prompt symptomatic relief provided by Pyridium is extremely gratifying to such patients suffering from the distressing symptoms of painful, urgent, and frequent urination, tenesmus, and irritation of the urogenital mucosa.

Pyridium produces a definite analgesic effect on the urogenital mucosa following oral administration. This action is entirely local, and is not associated with, or due to, systemic sedation or narcotic action. ***Literature on Request.***

REG. U. S. **PYRIDIUM** PAT. OFF.

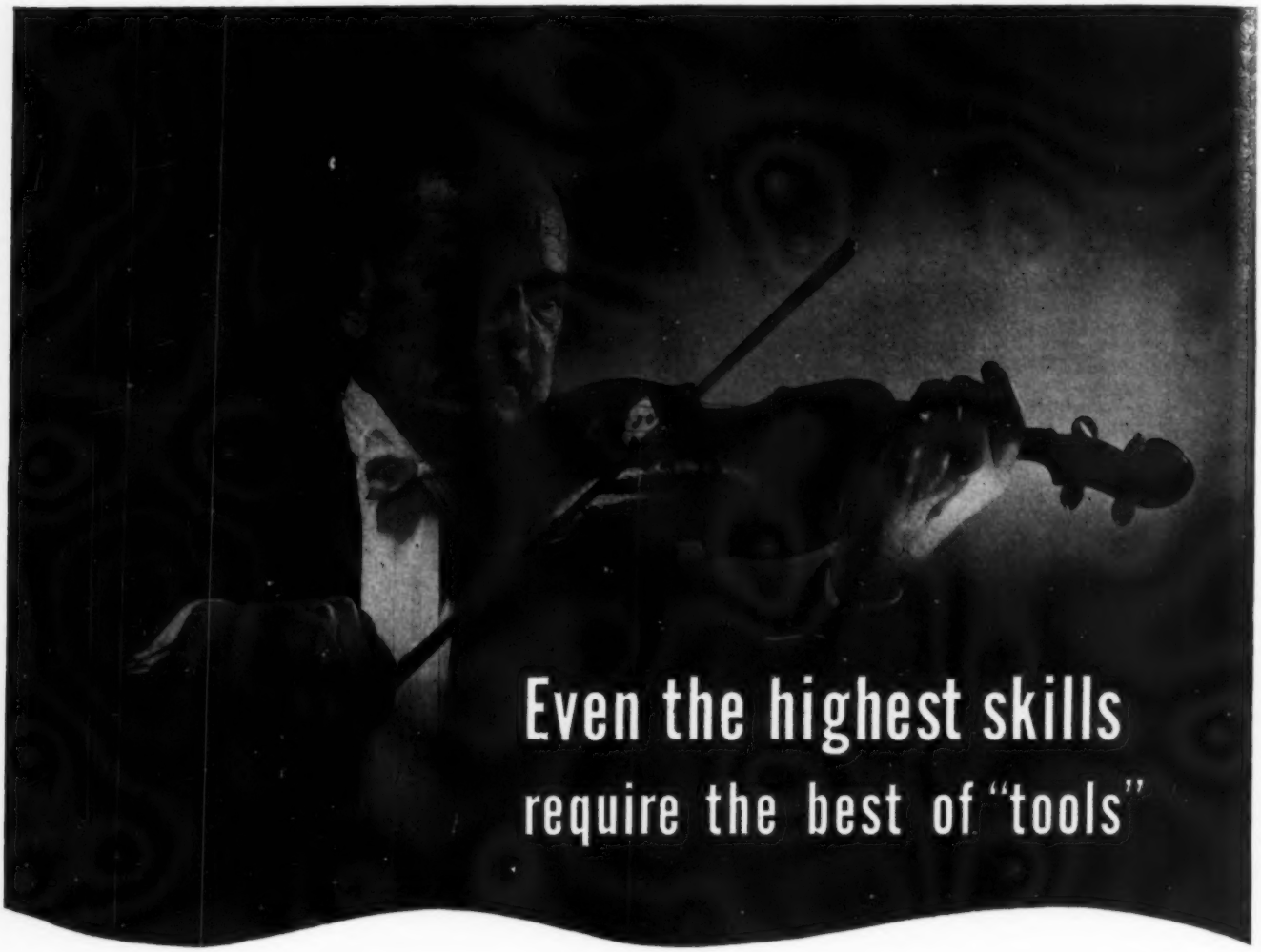
(Phenylazo-alpha-alpha-diamino-pyridine mono-hydrochloride)

MERCK & CO., Inc. RAHWAY, N. J.

Manufacturing Chemists

In Canada: MERCK & CO., Ltd., Montreal, Que.

PYRIDIUM is the United States Registered Trade-Mark of the product manufactured by the Pyridium Corporation. Merck & Co., Inc., Sole Distributors.



Even the highest skills
require the best of "tools"

AS A TRULY FINE VIOLIN complements the skill of a great artist . . . so, too, in radiography, the finest of equipment enhances the work of the roentgenologist.

That is why most of the world's roentgenologists rely on Patterson Intensifying Screens. That is why Patterson has been the standard of screen quality for more than 30 years. Your dealer has a complete stock. Patterson Screen Division of E. I. du Pont de Nemours & Co. (Inc.), Towanda, Pennsylvania.

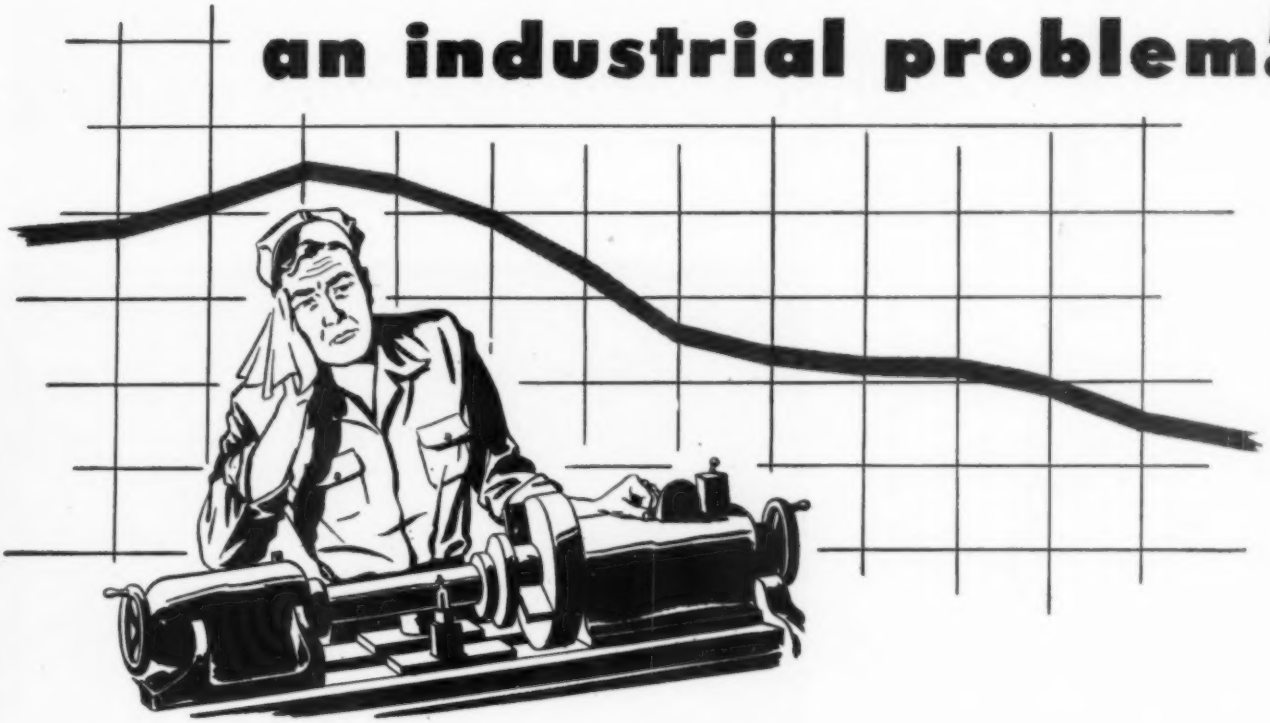
Patterson Screens are world-renowned for
DETAIL
UNIFORMITY
CONTRAST
SPEED
CLEANABILITY

DU PONT
REG. U. S. PAT. OFF.

BETTER THINGS FOR BETTER LIVING
. . . *THROUGH CHEMISTRY*
(Listen to "Cavalcade of America"—Monday Evenings, NBC)

Patterson Screens
The Standard of Screen Quality

When constipation becomes an industrial problem!



Sluggishness often is a cause of inefficient, non-productive workers—workers who fall below production standards and increase the danger of industrial accidents.

Where sluggishness results from faulty elimination, we suggest TAXOL—the mild, non-griping laxative—for relief from continued constipation.

TAXOL has been recommended and prescribed by many physicians for more than 18 years. Works easily and rapidly with minimum discomfort . . . consistent action.

Containing *only* 1/10 of the U.S.P. dose of aloes per tablet, TAXOL cuts down discomfort resulting from high aloes dosage. Hyoscyamus extract, included in the formula, also helps to reduce griping.

Write today for free trial package and literature.

CONTENTS OF TAXOL—Each TAXOL tablet contains 2/5 gr. aloes, 1 gr. bile extract, 1/13 gr. hyoscyamus extract and 3/4 gr. lipoid-free, desiccated pancreas and duodenum. Active emodin is released from the aloes by TAXOL's bile extract.

FLEXIBLE DOSAGE—Depending upon individual need, 1 to 6 tablets daily, swallowed without chewing, before meals or at bedtime. Any laxative is contraindicated if symptoms of appendicitis or intestinal obstruction are present.

TAXOL

LOBICA, Inc. • 1841 Broadway • New York 23, N.Y.

what is the objective evidence

1. Steck, I. E.: Clinical Experience in the Treatment of Arthritis with Massive Doses of Vitamin D, Ill. Med. J., *71*:243 (March) 1937.

2. Traeger, C. H., Squires, W. H. and Rudd, E.: Therapeutic Value of Electrically Activated Vaporized Ergosterol, Indust. Med., *14*:202 (March) 1945.

3. Levinthal, D. H. and Logan, C. E.: The Orthopedic and Medical Management of Arthritis, Journal Lancet, *63*:48 (Feb.) 1943.

4. Horwitz, H. and Joseph, N. R.: Prolonged Observation on a Group of Arthritic Patients, Indust. Med., *15*:100 (Feb.) 1946.

# of Steroid Therapy in Arthritis?

In order to properly evaluate the patient's response to steroid therapy with Ertron, the objective findings of the investigators should prove of interest.

OBJECTIVE RESULTS WITH ERTRON

Swelling—Decreased swelling[1] was early reported as evidence of favorable action of Ertron. X-rays demonstrated this to be due to diminished joint effusion[2] and reduced soft tissue swelling.[3]

Strength—The systemic action of Ertron is reflected in the improved muscular tone,[3] which is determined by recording the grip dynamometer readings[4] during the course of therapy.

Mobility—Increase in the angle of passive and active mobility[5,6,7] of affected joints in Ertronized patients is measurable.

Weight—In thin, asthenic individuals, weight gain[8] is evidence of the systemic action of Ertron, and usually accompanies increased appetite.

ERTRON
STEROID COMPLEX, WHITTIER

The distinct therapeutic action of Ertron is accounted for by its unique chemical composition. The method of activation employed in the preparation of Ertron produces a complex containing hitherto unrecognized factors which are members of the steroid group. The isolation and identification of these substances in pure form further establish the chemical uniqueness and steroid complex characteristics of Ertron.

Physician control of the arthritic patient is essential for optimum results. Ertron is available to the patient only upon the prescription of a physician.

Supplied in bottles of 50, 100 and 500 capsules. Each capsule contains 5 mg. of activation-products having antirachitic activity of fifty thousand U.S.P. units. Also, Ertron Parenteral in packages of six 1 cc. ampules. Ethically promoted.

Ertron is the registered trademark of Nutrition Research Laboratories

NUTRITION RESEARCH LABORATORIES • CHICAGO

5. Livingston, S. K.: Vitamin D and Fever Therapy in Chronic Arthritis, Arch. Phys. Therapy, *17*:704 (Nov.) 1936.

6. Snyder, R. G., Squires, W. H., Forster, J. W., Traeger, C. H. and Wagner, L. C.: Treatment of Two Hundred Cases of Chronic Arthritis with Electrically Activated Vaporized Sterol, Indust. Med., *11*:295 (July) 1942.

7. Farley, R. T.: The Treatment of Arthritis with Massive Dosage Vitamin D, J. Am. Inst. Homeop., *31*:405 (July) 1938.

8. Snyder, R. G., Squires, W. H. and Forster, J. W.: A Six-Year Study of Arthritis Therapy—with Special Reference to the Pharmacology, Toxicology and Therapeutics, Indust. Med., *12*:291 (May) 1943.

NEW BECOTIN WITH VITAMIN C

(Vitamin B Complex with Vitamin C, Lilly)

HIGH-POTENCY VITAMIN B COMPLEX AND VITAMIN C

'BECOTIN WITH VITAMIN C' (Vitamin B Complex with Vitamin C, Lilly) furnishes all the known water-soluble vitamins. In addition to the entire vitamin B complex, this product provides a therapeutic dose of the synthesized B vitamins and ascorbic acid.

General debility, lassitude, easy fatigability, anorexia, and belching and fullness after meals are commonly encountered symptoms of vitamin B complex and vitamin C deficiencies.

One Pulvule 'Becotin with Vitamin C' daily is adequate for the treatment of mild deficiencies; two or more pulvules a day are recommended for the more severe cases. Available at prescription drug stores everywhere.

ELI LILLY AND COMPANY • INDIANAPOLIS 6, INDIANA, U. S. A.

This magazine is published to promote sound thought upon and concerning industrial medicine and traumatic surgery. To that end it will contain articles, news items, reports, digests, and other presentations, together with editors' comments. The editorial policy is to encourage frank discussion. On this basis contributions are invited.

Industrial Medicine

Reg. U. S. Pat. Off.

The editors will exercise care in checking on the accuracy of data printed but in all other respects articles and opinions of which expression is allowed are the opinions of their authors—the editors reserving in all cases the right to comment on the same in the current or any subsequent issues as they may be inclined.

The Journal of Industrial Health, Occupational Medicine and Traumatic Surgery

With which are consolidated "The Industrial Doctor" and "International Journal of Medicine and Surgery."

The Science, the Law and the Economics of Industrial Health

Volume 16 | March, 1947 | Number 3

The Role of the Industrial Physician

—In the Personnel Department—

GEORGE A. WAINWRIGHT, B.A., M.D.,
Director of Medical Services,
John Labatt Limited, London, Canada

THE medical department in industry is usually associated with and constitutes an integral part of the personnel department. While its scope is more limited, its aims are essentially the same and if the personnel department in an industry is to accomplish its purpose, an efficient medical service is essential. While both departments are employed and paid by management, the responsibility of each is essentially to the worker. Both have to justify their existence to management by such tangible evidence as lessened accident rates, reduced absenteeism and increased worker efficiency. Moreover, management today appreciates the fact that with both departments, there are further intangible benefits derived, from improved human relations and better morale among the workers. Like personnel work, the medical programme undertaken by an industry will vary according to the size and needs of that industry but it is generally accepted that a plant employing 500 men requires the services of a full-time plant physician.

The close association of the personnel department and the medical department might be schematized as follows:

	Personnel Dept.	Medical Dept.
1. Selection of the proper worker.	Interview.	Physical examination and psychological assessment.
2. Ensuring workers security and freedom from worry.	Sick benefits. Pension plan. Elimination of accident hazards.	Examinations and advice re. physical conditions.
3. Improved plant and working conditions.	Cafeterias, proper shower and dressing room facilities, etc.	Supervision of diets and sanitary inspection.
4. Setting up a programme to keep the worker contented and efficient.	Proper recreational facilities. Adjustment of grievances.	Physical examination for sports. Consultation service.
5. Developing a man's self-esteem and self-reliance.	By interview. By introducing numerous social and sport activities into the plant with as many participants as possible.	By interview and examination to ensure physical fitness for participation.
6. Interest in man's well being in his life outside the plant.	Advice on domestic and financial problems.	By cooperation with public health programmes.

Read before the University of Western Ontario, Extension Department—Course on Personnel Problems February 3, 1947.

Irrespective of the scope of the medical services undertaken by an industry, there are three services which should be considered essential:

1. Pre-placement Examinations.
2. Periodic Health Examinations.
3. Consultation Service—available to all employees.

Pre-Placement Examination

THE pre-placement examination should be thorough and should include a chest x-ray to rule out tuberculosis. The applicant should sign authority for the results of the examination to be used in determining his suitability for the job. This will alleviate any danger of a lawsuit and protect the doctor-patient relation. But, a complete physical examination alone is not adequate. An evaluation of the applicant's general make-up is essential bearing in mind the vacancy he is seeking to fill. He may possess all the requirements of a capable worker and still not be suitable for the type of work for which he has applied. If the work is unskilled and monotonous, an intelligent, healthy, ambitious youth may not prove to be the right selection. He may become discontented with the monotony of the job and the slow promotion and prove a source of discontent in the plant. Both the medical department and the personnel department must assess the individual for the job.

The applicant's reactions at the time of this examination are important for he is naturally nervous and apprehensive. He may make an effort to conceal facts which he thinks may interfere with his chance of employment. If the examination is conducted considerately, the man is properly prepared for the next step in the employment procedure. Any defects that are revealed should be discussed with him frankly following the examination. If correctible, he should be so advised; if incorrectible, a frank discussion will help him with his adjustment. If the man is to be rejected for physical reasons, he should be so advised at the completion of the interview following the pre-placement examination. A conference should be held with the other representatives of management who have interviewed the applicant. These will usually comprise the department-head or his representative and one or two members of the personnel department. If these

conferences are held to discuss the suitability of each applicant for the job for which he has applied, much will be accomplished to reduce labour turnover.

The term "pre-placement examination" is used advisedly in contradistinction to "pre-employment." The name implies the proper placement of the handicapped individual. The man should be assessed from a positive rather than a negative viewpoint; what he can do rather than what he can't do. In Great Britain an industry must employ 3% physically handicapped individuals but in this country, the moral obligation seems to be compulsion enough. There should be close liaison between the job analyst and the medical director. Very often a man can be fitted to the job and again a job can be fitted to the man. Many valuable workers previously would have been rejected but have proved their efficiency by such a system.

Periodic Health Examinations

THE earlier antagonism with which labour viewed the medical department is now almost non-existent. Previously, the worker was suspicious of the plant physician and particularly of the periodic health examination. Through education, the average worker has come to accept the fact that the medical check-up is of definite value to him. He must appreciate the fact that the findings are kept as confidential as if he consulted his private physician.

The periodic medical examination must not be used as grounds for dismissal when the real reason is incompetence or laziness.

Only when the worker can be benefitted by imparting information regarding the examination to the proper authority should there be any deviation from the policy of strict confidence between doctor and patient and then, only with the consent of the worker. A worker who is subject to frequent colds or rheumatism resulting in considerable absenteeism, in this manner may be benefitted by his superintendent cooperating with the medical department in reallocating him. However, certain conditions may be revealed by the examination which require medical action for the protection of the worker and of others. An example of this is an epileptic who takes infrequent seizures or a diabetic who is operating a commercial vehicle. The safety of the individual and of others is jeopardized in such cases. A reasonable explanation of the hazards involved should secure the cooperation of the patient. If this cooperation is not forthcoming, then there is no alternative on the part of the physician but to exercise his prerogative of suspending the worker until the situation is adjusted.

The worker who is approaching retirement age may view the periodic examination with apprehension fearing that it will lead to a premature termination of his employment. Such fears may be allayed at the interview following the examination, either with the assurance that he is well able to carry on at the work he is doing or the reason submitted to him as to why for his own benefit he should be transferred to a lighter job. At the time a worker is eligible for pension, the personnel department should review the length and efficiency of his service and assess his financial situation on retirement. If he is then referred to the medical department for an evaluation of his future earning ability in so far as his physical condition is concerned, the man's future financial security can be adjusted.

No treatment by the industrial physician should be carried out for any condition revealed by the periodic examination. The worker should be referred to his own doctor. A personal letter to the outside physician stating why the worker is being referred and summarizing the physical findings will evoke the good-will of the private physician. It will also insure better care for the patient as his doctor knows the company and plant physician are interested in his welfare. If a request is submitted for recommendations concerning the man's working conditions which may have a bearing on the medical problem it insures complete cooperation in his medical care.

The Health Consultation Service

LIKE the personnel director, the plant physician should be accessible both temperamentally and geographically. The success of the medical department in an industry may be estimated by the extent to which the consultation service is utilized by the employees. Each patient presenting himself to the medical department represents a public relations problem. He does not contact his own doctor usually for one or two reasons—the matter is too trivial or—he is concerned about expenses. Many of the consultations are really not medical problems at all and there is no special dividing line between many of the problems discussed with the personnel director and the medical department. All consultations should be conducted on an appointment basis in order to avoid disrupting production and to prevent the medical department becoming a rest room or a gossip centre. Frequently the apparently trivial complaints will prove the precursor of some more serious disease and much time and expense can be saved the worker if he uses the consultation service. A knowledge of the worker on the part of the plant physician here may prove invaluable. Financial worry, maladjustment and domestic difficulties are often the factors underlying the gastric ulcer or the careless accident. If this underlying factor is not adjusted, treatment will accomplish only temporary benefit.

Close liaison between personnel and medical departments will accomplish much in the final solution of the man's problem.

Each employee resuming work after an illness, accident or operation, should report to the medical department. An examination will confirm his fitness to resume his usual occupation or justify an assignment to lighter work for a suitable period. Any recommendations brought by him from his own doctor concerning necessary work precautions should be noted and referred to the superintendent.

Other Activities of the Industrial Physician

ADDITIONAL activities of the medical department will vary with the scope of the programme undertaken by the particular industry. Since 90% of absenteeism arises from factors outside the plant, cooperation between the plant physician and public health and preventive-medicine officials is essential. The day may yet come, as Doctor George Crile has predicted, when the very treatment of disease is an admission of failure on the part of the doctor. This is particularly true in regard to tuberculosis. In addition to the pre-placement x-ray examination, all suspicious chest cases revealed by the periodic examinations should be referred for chest x-ray. If the case is positive, all immediate contact workers should be referred for x-ray examination; again at the end of six months and again at the end of one year. A complete plant tuberculosis survey should be carried out every two or three years. These three precautionary measures should adequately protect the industrial worker against tuberculosis.

Much of the time lost in industry is due to respiratory infection—the common cold and influenza. The

industrial physician is not infringing on the territory of the private physician if he makes available preparations designed to increase the workmen's resistance to colds and to abort the cold at its onset. Such preparations are reliable vitamin products, oral cold vacinne and powders for colds.

Recently, after thorough experimental work in the American Army, a vaccine designed to protect against influenza has become available. I believe industry offers a fertile field for its use.

The industrial physician should make frequent plant tours preferably in company with the personnel director. Both will not be looking for the same things but familiarity with the workers, the hazards involved with various machines, temperature variations in the plant, sanitary conditions and the general morale of the workers is of vital importance to both. Thus, when subsequent accidents or problems arise, each will be able to visualize the locale and conditions associated with them.

Safety

THE plant physician should be a member of the safety committee and work in harmony with the safety engineer. He should attend all safety meetings prepared to discuss the individual accidents which have occurred during the preceding month. To do this efficiently, he should visit the site of all accidents involving lost time in an effort to determine where, how and why the accident occurred. He should be prepared to submit recommendations to prevent a recurrence of the mishap if there are evidences of hazards or carelessness.

The whole field of safety constitutes a challenge to the industrial physician. Obviously a new approach to the problem is necessary. The most intensive safety programmes have only succeeded in reducing the accident rate 10 to 15%. The human factor is still predominant in responsibility for the vast majority of accidents. There is evidently a pattern to the accident prone individual which must be recognized; 10% of the workers in a plant are responsible for 90% of the accidents; the same names appear frequently in medical aid records. If these individuals can be recognized for the hazard they are to themselves and to others, they can be assigned work of a type to protect themselves and their fellow workers. The industrial physician himself is not adequate to cope with such a problem but with the aid of a psychiatrist, I feel that this approach to the problem offers a reasonable chance of success.

The psychiatrist will need the help of the plant physician because of his knowledge of the worker and because of the statistical set-up which is an essential part of an efficient industrial medical plan.

Summary

AN EFFORT has been made to indicate that an efficient medical plan for industry should materially aid in accomplishing the aims of the personnel department.

2. The essentials of such a medical service irrespective of the extent of the medical programme should comprise:

(a) Pre-placement Examinations.

(b) Periodic Health Examinations.

(c) Consultation Health Service—available to all employees.

3. Depending on the scope of the medical program undertaken, further activities may include preventive health measures and an active interest in the safety work.

An Evaluation of Some Factors in the Development of Occupational Deafness

WALTER R. MacLAREN, M.D.,
ALBERT L. CHANEY, Ph.D.,
Medical Department,
Lockheed Aircraft Corporation,
Burbank, California

IT HAS long been recognized that exposure to noise of sufficiently great intensity will produce varying degrees of impaired hearing. Familiar examples are found in the temporary deafness which follows a single shock wave, such as an explosion, or in the similar hearing loss produced by a less intense but longer exposure to the noise of aircraft.

Although the role of noise alone in producing permanent hearing loss has been questioned lately, the occupational syndrome of "boilermakers' deafness" is a classical example. This permanent hearing loss is found characteristically among those who have been exposed repeatedly over an extended period to high noise levels. If recovery ever takes place from this type of deafness, it is so slowly that for practical purposes it may be discounted and the term "permanent" hearing loss is justified.

Whenever various types of deafness are investigated systematically with an audiometer of adequate range and accuracy, it is apparent that the deafness complained of by those in noisy occupations differs qualitatively from that associated with disease or advancing age. Characteristically, a progressive loss of the higher frequencies goes with age, and an overall loss including both high and low frequencies accompanies conduction pathology of any extent. In contrast, the loss associated with exposure to noise appears to involve the frequencies from 3000 to 5000 cycles, while frequencies above and below are heard relatively well.

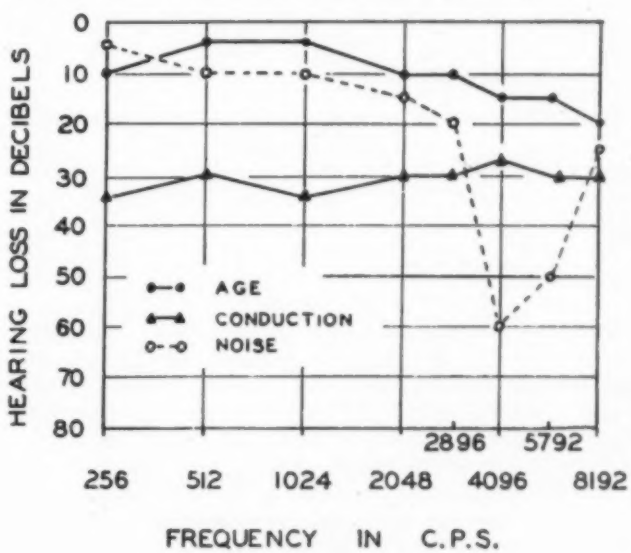


Fig. 1.
Representative Audiograms in Three Types of Hearing Loss. The curve of age shows the gradual fall in acuity at higher frequencies. The pronounced dip at 4096 c.p.s. is usually found in acoustic trauma. The lowest curve is typical of middle ear pathology

In Fig. 1, typical audiometric curves are shown for these three varieties of hearing loss. The curves for the effect of age and of impaired conduction are adapted from several sources;[1,2] that for the effect of noise is from our own experience with factory workers and flying personnel, and agrees closely with

results obtained in experimental exposure to noise.[4]

Granted that noise produces a characteristic type of hearing loss (acoustic trauma), the important questions from our point of view are:

(a) How is hearing loss related to noise exposure?

(b) When does such a hearing loss become "permanent?"

(c) Does noise hasten the progression of other types of partial deafness?

In the hope of arriving at some answer to these questions, a preliminary analysis has been made of more than 5000 audiograms taken during the past four years in an airframe manufacturing establishment.

The first phase of the study embraced a survey of the Lockheed plants in the Los Angeles area to determine the magnitude of the noises encountered in various processes, and to decide whether the noises measured constituted a major or minor hazard. From this information also could be determined what preventive measures, such as the wearing of ear defenders, or the acoustic treatment of buildings, might be desirable or necessary.

Aided by the Department of Physics at the University of California at Los Angeles, and by the Cruft Laboratories at Harvard University, a detailed noise survey was carried on at Lockheed during 1942-43.[9] Following the survey and using it as a guide, an extensive program of audiometric testing of factory workers was started and is still in progress.

In the following sections the data obtained in the Noise Survey will be presented first, to be followed by some of the audiometric changes that resulted from exposure to these noises.

Noise Survey

FOR the purpose of the survey, 28 locations throughout the several plants of the company were selected, and at each a record of overall intensity and intensity by octave bands was made. The latter measurements provided a "sound energy spectrum" from which the relative contributions of low, middle, and high frequencies could be determined.

TABLE I.
SOURCES OF NOISE, IN ORDER OF LOUDNESS

Source	Decibel Range*
1. Drop Hammer	(100–130)
2. Rivet Gun (and Bucker)	(102–128)
3. Pin Router	(104–116)
4. Circular Saw	(100–116)
5. Handforming of Sheet Metal	(100–110)
6. Speed Hammer	(96–110)
7. Trip Hammer	(–110)
8. Punch Press	(96–108)
9. Band Saw on Sheet Metal	(–106)
10. Air Drill	(92–100)
11. High-Cycle Milling Machine	(– 96)
12. Public Address System	(90– 96)
13. Compressed Air	(– 92)
14. Spot Weld, Dimpler	(88– 92)
15. Filing	(– 88)
16. Hydro-Press	(84– 88)

*Decibel readings are those at the ear of the operator or person most severely exposed.

Table I lists the main sources of noise studied, in the order of their maximum over-all loudness. The greatest intensity appears to be produced by the drop-hammers. This single shock wave does not show any characteristic tone; it has both low and high frequency components. Because of the short duration of the sound the peak intensity is difficult to measure and may well be higher than the figure quoted (130 db). Heavy riveting reaches 126 db, saws and routers 116 db, and speed hammers around 110 db.

The acoustic spectra for a number of representative processes in metal fabrication are given in Figs. 2 to 5. From these curves it is apparent that pure tones or narrow frequency bands are not usually present. Therefore, factory noise in general will present to the ear a broad sound spectrum covering practically the entire audible range. Some processes do show peak intensities, though not sharp. The curve for sawing metal (Fig. 2) rises to a maximum in the octave above 2400 cps. and the curve for heavy riveting (Fig. 5) shows a moderate peak in the octave 1200-1400 cps. In these frequency ranges the ear is quite sensitive to noise.

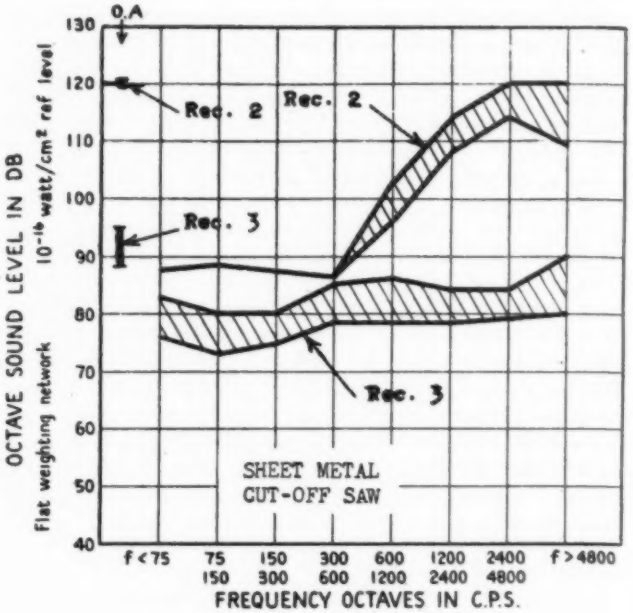


Fig. 2.
Over-all Sound Level and Frequency Spectrum of a Sheet-metal Saw. Record No. 2 is with saw cutting. Record No. 3—saw idling. Vertical lines under O. A. indicate over-all sound intensity range. The curves show sound intensity by octaves. Shaded area indicates range of intensity during recording period

Although the survey measurements showed riveting to be second in overall intensity levels, the number of

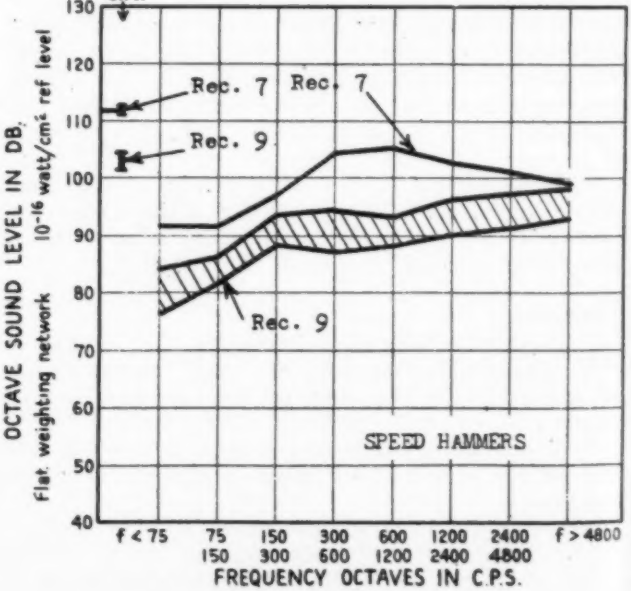


Fig. 3.
Over-all Sound Level and Frequency Spectrum Produced by Speed Hammers. Record No. 7 taken beside operator. Record No. 9 taken at side of room integrates noise from several hammers. Interpretation as in Fig. No. 2

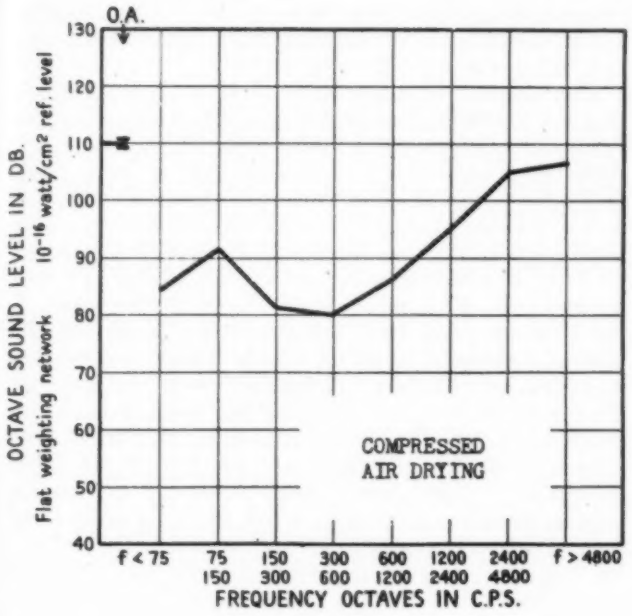


Fig. 4.
Over-all Sound Level and Frequency Spectrum of Compressed Air Drying. The noise is unusually constant and contains a large high frequency component. Interpretation as in Fig. 2

employees affected was so great that this process was easily the most important noise hazard encountered. In many of our departments 75% of all workers were either riveters or buckers, and the totals ran into the thousands.

Another factor to be considered when ranking processes by noise level is the duration of the noise and the time ratio of noise to recovery. Riveting in stacked wing jigs produced an almost continuous noise, as did pin routers, highspeed milling machines, and exhaust fans. Other processes, such as sawing, or the operation of a drop-hammer produced intermittent sounds, although the drop-hammers appear to make up in intensity what they lack in duration.

At the time of the Noise Survey exact information on the usefulness of ear protectors had not been collected. As a working basis on which to issue ear protectors, it was decided that if high frequency (2000 cps. and up) intensity levels were below 75 decibels (db), protection would be unnecessary, but would be required at levels above 85 db. Of a total of 32 recordings of noise taken in working areas, all but six were above 85 db. Three were between 75 and 85 db. and three below 75 db. On this basis the great majority of fabricating processes called for ear protection if significant hearing loss was to be avoided among exposed workers.

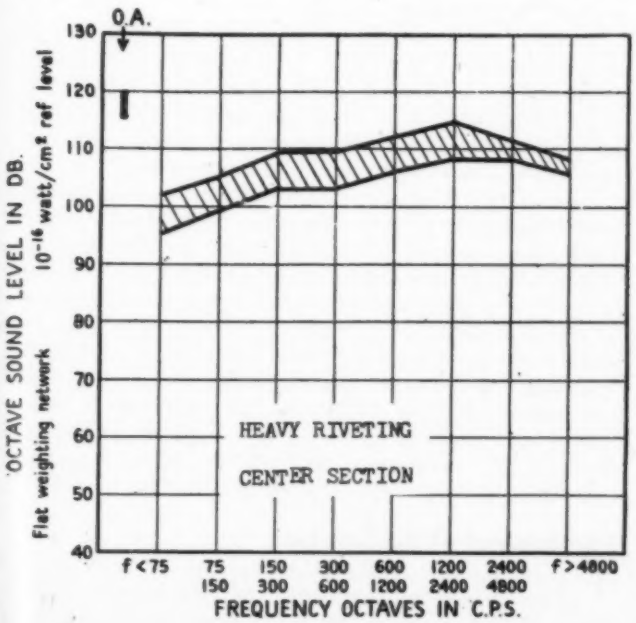


Fig. 5.
Over-all Sound Level and Frequency Spectrum of Riveting. Taken at work station in assembly of P-38 center section. Interpretation as in Fig. 2

Audiographic Measurement

THE hearing curves for air conduction were taken in relatively quiet surroundings using Maico D-3 Audiometers. When it was necessary to take readings in the factory proper, an insulated booth was used. On other occasions the examinees came to a sound-treated room. An attempt was made to hold background noise below 50 db. This is equivalent to a "quiet" room, and under these conditions no correction is necessary for the masking effect of ambient noise.

The various instruments were calibrated yearly and agreed among themselves on repeated checks to ± 5 db. The measurement was in the hands of trained technicians who used the crescendo method in a standardized routine. The frequencies were 512, 1024, 2048, 2896, 4096, 5792, and 8192 cps. Cooperation on the part of the subjects varied with intelligence and motivation, but was in general judged to be good.

Classification of Audiograms

THE task of classifying the audiograms was approached with only two simple assumptions in mind; namely, that the loss in acuity following noise exposure is most evident between 3000 and 6000 cps.,[7,8] and that a more or less flat loss, including lower frequencies is probably conduction deafness (2) and not greatly related to noise exposure. In the absence of bone conduction records to supplement air conduction, these assumptions were not expected to hold in any individual case, but to apply to group averages.

Accordingly, 5000 audiograms, dividend among five departments, were analyzed and found to fall naturally into the following classes:

Class I. Normal Audiograms: no loss greater than 20 db at any frequency from 572 to 8192 cps.

Class II. High frequency loss: normal from 512 to 2048 cps., but showing significant losses at 2896, 4096, or 5792 cps. with tendency to recovery at higher frequencies.

Class III. Extension of high frequency loss: similar to Class II, but showing extension of loss to involve 2048 or 1024 cps. Lower frequencies still less involved than higher.

Class IV. Low and high frequency losses: all frequencies showing at least 20 db. loss, most marked again in region 2896 to 5792 cps.

Class V. Flat loss curve: uniform losses at the lower frequencies, with either a rise or no greater loss in the range 2896-5792 cps.

An example of each class of audiogram is shown in Fig. 6.

No audiograms were found that could not be readily fitted into one or another of these categories. Three classifiers, working independently, showed almost complete agreement in a series of nine hundred audiograms. The lower limit of "normal" for our audiograms was set at 20 db.

Audiograms falling into Class II are of the variety usually associated with exposure to excessive noise

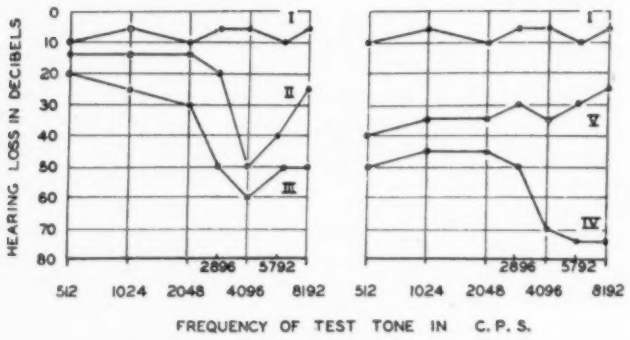


Fig. 6.
Audiogram Classification. Representative curves for each of the five classes of audiograms derived in the study. Roman numerals refer to class. For explanation, see text

(acoustic trauma) in the earlier stages, whereas we considered Class III to represent a later stage of the same process, and hence to represent a more severe form of acoustic trauma.

The significance of Class IV audiograms is not entirely clear without bone conduction measurements to reveal the nerve element. Two possibilities were considered—that the greater high frequency loss is acoustic trauma superimposed on an already low general level from conduction loss, or that the whole picture is one of severe acoustic trauma. Subsequent analysis lends support to the second possibility, in which case a rigid distinction between Classes III and IV may not be justfied. Gardner has presented data[5] on shipyard workers which brings out a similar depression of lower frequencies related to length of exposure.

Our Class V audiograms closely resemble those of natural or experimental[2] conduction deafness, and were not considered to show acoustic trauma.

TABLE II.

Audiogram Classification	A	Departments in Company B	C	D	E	C_1
		% employees in each classification				
1	62%	16%	15%	14%	6%	36%
2	5%	15%	26%	22%	13%	34%
3	4%	12%	17%	6%	10%	8%
4	4%	27%	22%	34%	47%	7%
5	25%	30%	20%	24%	24%	15%
	70	100	105	110+	110+	105
		Average noise level in db.				

In Table 2 the results of the audiogram analysis are presented by class of hearing loss and by departments within the company. Under each department column, the average noise level is given. The same data is presented in graphic form in Fig. 7. A brief description of each department is tabulated below.

Department A: "control"; precision electrical assembly; a "quiet area"; noise levels 60-80 db.

Department B: riveting on P-38 center section and booms, miscellaneous light riveting; noise average 100 db., occasionally rising to 112 db.

Department C: heavy riveting on stacked B-17 wing jigs; noise continuous, averaging 100-110 db., occasionally rising to 128 db.

Departments D and E: heavy riveting on Hudson wing jigs in barewalled concrete building; subjectively noisiest area in plant; average noise above 110 db.

Reference to the Table and Chart shows that the percentage of normal audiograms (Class I) is inversely proportional to the average noise level, and conversely the "noise effects" are directly related. In fact, the majority of employees—54% to 70%—working for any length of time at these high noise levels show varying degrees of hearing loss.

The validity of Department A as a control may be checked by comparison with the result of other studies. From Beasley[1] we get a figure of 62.7% in the general population with normal hearing for speech. Since Beasley's "normals" included all individuals with losses above the speech range (above 3000 cps.) as well as those with no hearing loss, our Classes I and II must be added to give a comparison figure of 67%. Classes III, IV, and V, or 33% of Department A, would correspond to Beasley's Stages I, II, and III Partial Deafness, or 33.3% of his series. An attempt to relate our Classes individually with the National Health Survey Stages of Partial Deafness has not been successful, due to the differences in criteria used. However, we feel that the close correspondence found in respect to the normal and the hard of hearing groups indicates that our control group is representative of the population at large. By extension we may then assume that before noise exposure the population of each department must have resembled closely our control, and the changes found are properly ascribed to the noise exposure.

The striking increase of audiograms showing the effects of noise in Departments B through E appear to mainly at the expense of the normal group, although all "noise" classes expanded. The progression of individuals from normal through Classes I, III, or IV, has not yet been investigated. It is clear that individual response is highly variable, for some employees of long standing retain perfect hearing, whereas others show severe losses after but a few weeks in a noisy department.

The notable expansion of Class IV found in Departments D and E, where noise conditions were very bad, lends support to the opinion expressed earlier, that marked losses at the lower frequencies (512 to 2096 cps.) follow from excessive noise exposure. So far we have insufficient data to indicate whether recovery from Class IV hearing loss takes place to any practical extent. From a small number of audiograms of workers transferred to quiet departments, it would appear that recovery is slight.

Another feature of interest in our results is the relative stability of Class V. These individuals with supposed conduction deafness remained in about the same proportion in each Department. This could be interpreted to mean that noise exposure does not aggravate the existing conduction deafness.

The sharp reduction in normal audiograms between Department A (70 db average noise level) and B (100 db. average) indicates that the dividing line between innocuous and hazardous noise lies somewhere between the two. The empirical figure of 75 db, given in the discussion on the Noise Survey above, may be somewhat low since we have other data to indicate that hearing loss can be recovered from, even with continued exposure to 95 db. The safe limit of exposure has been given by Bunch[3] as 80-90 db, and McCoy[7] has suggested that the practical range for corrective measures be 100 db and higher.

Development of Hearing Loss

THE immediacy with which hearing loss may appear after beginning exposure to industrial noise is shown in Fig. 8. Here 100 individuals who had worked one week in Department C (heavy riveting; average noise level, 105 db) are compared by Class of Audiograms with the control Department A, and the totals

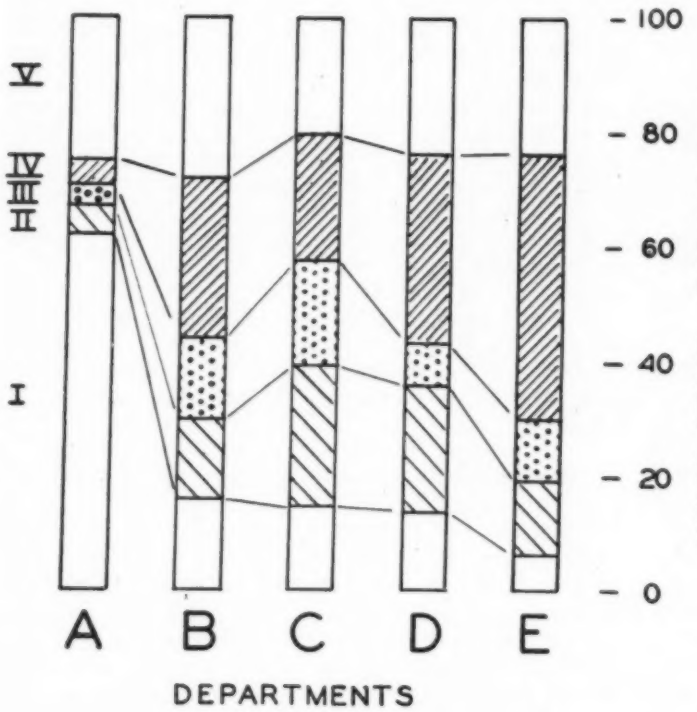


Fig. 7.
Distribution of Classes of Audiograms in Different Departments. Departments are routed from left to right in order of increasing over-all noise level. Roman numerals at the left indicate Class of Audiogram represented by the corresponding coded section of the columns. For description of departments see text

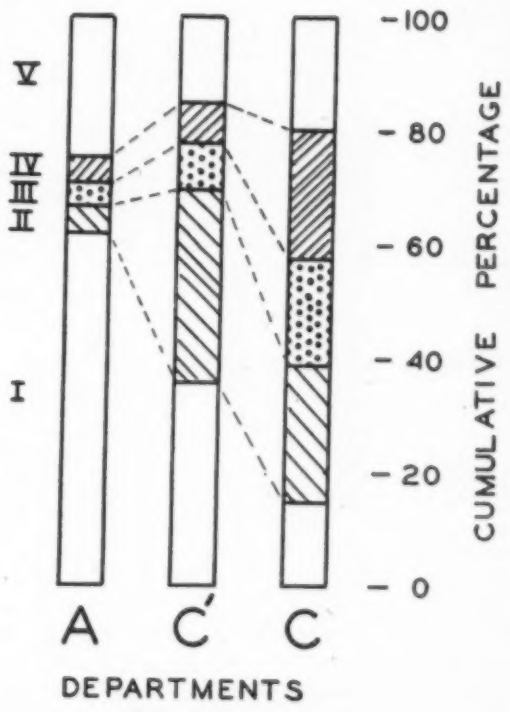


Fig. 8.
Distribution of Audiograms after Short Exposure to Noise. Departments A and C are as in Fig. 7. Department C' represents 100 employees working less than one week in Department C. For interpretation of coding see Fig. 7

for Department C. It is evident that normals have decreased from 62% to 36%, whereas curves showing the characteristic high frequency losses have increased from 13% to 49%. Audiograms of Class IV, which show losses at all low frequencies as well as extensive high frequency losses, are not greatly increased (4% to 7%), indicating probably that a more extended exposure is necessary to develop this type.

The rapidity with which pronounced losses occurred on noise exposure in our series is quite in keeping with experimental evidence. Thus Davis and his coworkers in 1943[4] showed that hearing losses up to 60 db could be produced in a matter of a half hour by exposure to a 4000 cycle tone at 110 db intensity.

Further check from week to week on the Group C, showed that most of the loss was established during the first three or four weeks, and that subsequent change was very gradual. There is a tendency for hearing loss at these noise levels to reach a certain limiting value early in the course of exposure and thereafter remain almost stationary.

In Department C it was common to find that audiograms taken six or 12 months after a previous one showed either no change or a slight improvement. However, it was equally common to find a gradual progression of hearing loss. This was particularly noticeable in the case of workers exposed to the highest noise levels, such as drophammer operators, who show as a class the most profound damage. From this evidence we may assume that the loss attendant on acoustic trauma is not likely to become stabilized if the average exposure is much greater than about 100 db.

Recovery from Noise Exposure

THE effectiveness of ear protection devices, and indirectly the extent to which recovery may take place, was tested on a group of 100 individuals in Department C. The subjects were selected on the basis of audiograms showing the characteristic changes due to noise exposure. They were provided with hearing protective devices of the plug type for constant wear during working hours, and then hearing was tested at intervals for one month.

The average audiometric curves for these individuals is shown in Fig. 9. The initial audiogram shows a loss of 60 db. at 4096 cps., a 27 db. loss at 8192 cps., and only 17 db. loss at 2048 cps. This falls into our Class II. After 3 working days, wearing ear protection, the average at 4096 cps. was 40 db, and after one month it was 34 db. The rate of recovery is at first rapid, then proceeds more slowly. Recovery from experimentally produced "noise" deafness follows the same pattern.[4]

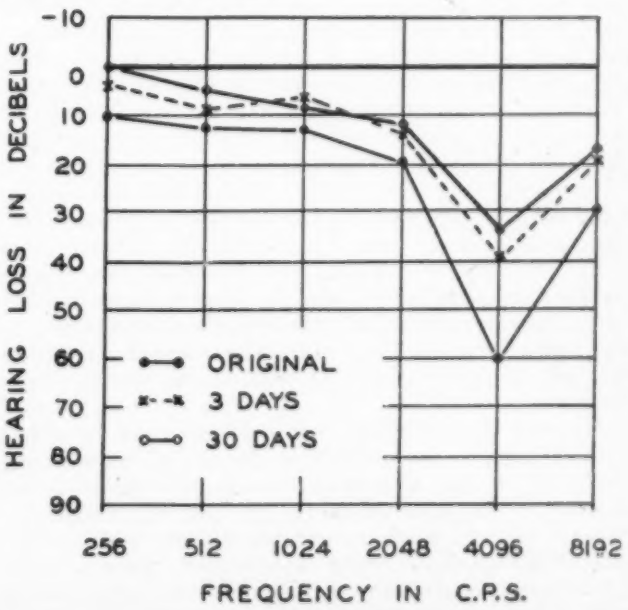


Fig. 9.
Recovery of Hearing when wearing Ear Defenders. Audiograms on 100 employees in a noisy area before and after wearing of ear plugs

The ear defenders used on this group produced a 30 db. attenuation of high frequency sounds. Riveting noise of 125 db. was reduced to 95 db. at the ear drum, which was enough to permit partial recovery of high tone hearing. Further attenuation would undoubtedly have led to even greater recovery.

We do not as yet have adequate data on recovery by individuals who showed severe noise type losses, so that the point at which permanent loss is established can only be estimated. From our limited experience, however, it appears that when losses reach our Class 4, recovery is not to be expected.

The Problem of Noise Control

THE most important factors in the production of occupational deafness is the noise level to which the worker is exposed, provided the exposure is fairly constant and lasts for more than a few weeks.

Following this is the individual susceptibility to the effects of noise, which becomes evident as soon as the intensity of exposure reaches a high enough level. Our data indicates that noise levels of 70 db. or thereabouts do not increase the incidence of impaired hearing among workers over that found in the general population. Levels of 100 db. or greater, on the other hand, greatly increase the incidence of impaired hearing, which may reach a figure of 75% of all workers in a given department. Even then, a small number of individuals continue to show perfectly normal auditory acuity.

The presence of conduction deafness does not seem to be an important factor in relation to the development of occupational deafness. It may be that the defect of conduction attenuates the ambient noise to the point where the cochlear mechanism is adequately protected.

Since the aim of noise control is to prevent permanent damage to hearing, any intelligently directed program must be based on noise level measurements and audiometric data properly interpreted. Noise level measurements will serve to indicate the areas and processes where control measures are necessary and those which may be safely neglected.

When levels above 95 db. are found, several remedies are available. Acoustic treatment of working areas may be tried, but this is seldom practicable. Ear defenders may be provided for all workers, and if worn faithfully, and if capable of producing enough attenuation, they will provide satisfactory control. However, the majority of workers find ear plugs a greater burden than the loss of hearing without them. Only a third of the Lockheed employees to whom ear plugs were issued wore them regularly. Another third used them occasionally, and the remainder discarded theirs soon after issue.

A third course available is the selection of naturally resistant individuals for work in noisy areas, but these are so few in number that no large department could be filled with them. More reasonable is the practice of eliminating the very noise sensitive individual.

At present we do not have sufficient data to select with complete assurance from an initial audiogram those individuals who should not be allowed to work in a high-noise area. However, we feel that whenever noise levels at 100 db. or greater will be encountered, each worker should have a pre-employment audiogram, followed by others at one and six months. If loss of the frequencies below 3000 cps. has increased at either time, or if losses are generally progressive, the worker should be shifted to a quieter environment. In this way the number of individuals who will find themselves with irreversible changes in hearing can be reduced.

The most fundamental attack on the noise hazard is removal at the source. This has been a somewhat neglected field, although methods are known and available. Processes that are inherently quiet, such as spotwelding, squeeze riveting, arc or flame cutting, and so on, can often be substituted for other methods of metal fabrication with no attached economic penalty. The magnitude and extent of the noise hazard in modern industry makes it highly desirable that all known methods be used in the attack, and that greater attention to the subject be given by industrial physicians, safety engineers, and representatives of management.

Summary and Conclusions

OCCUPATIONAL deafness is a variety of acoustic trauma resulting from exposure to industrially produced noise of sufficiently great intensity. The significant factor in its production are probably many,[8] and in this report we have considered only a few; namely the overall noise level, the time of exposure, the effect of pre-existing conduction deafness, and very briefly, the effect of ear protection and the rate of recovery.

The noise survey revealed that levels above 100 db. are common in metal fabrication, and that riveting is an important source of hazardous noise. Industrial noise also appears to be of the broad spectrum variety without prominent frequency peaks or narrow frequency bands.

A sample of 5000 audiograms from a total of over 15,000 has been analyzed and a classification developed. When departments are arranged by their over-all noise levels, our audiographic classification shows that certain types of hearing loss increase greatly in the presence of intense noise.

The borderline between relatively harmless noise and that which produces steady deterioration lies in the region of 100 db. In any group there will be individuals who do not show acoustic trauma even at the highest levels encountered. These become fewer as the intensity rises.

The major portion of hearing loss due to noise takes place within a few days, or even a few hours, and at first involves mainly frequencies above 2048 cps. Later the loss extends to lower frequencies, but at a much slower rate. The reverse process takes place after removal from noise, provided the loss has not been too great.

Ear defenders that attenuate the higher frequencies enough to bring over-all loudness below 100 db. will allow a measure of recovery from acoustic trauma.

Individuals who show a flat loss of acuity of the conductive type are not found more commonly among groups exposed to noise than in the general population. These individuals probably do not need to be excluded from noisy areas.

Where noise levels regularly exceed 100 db. preemployment audiograms should be obtained, and repeated at monthly intervals until it is determined what sort of equilibrium the individual can attain. Progressive deafness after six months should always call for a transfer to quieter surroundings. So should marked losses in the region below 2048 cps. even when appearing early.

Finally, a noise hazard should be controlled at the source, for no other methods of control are perfectly effective.

References

1. BEASLEY, WILLIS C.: Bulletin No. 6, Preliminary Reports. The National Health Survey Hearing Study Series; Division of Public Health Methods, National Institute of Health, the U. S. Public Health Service, Washington, D. C., 1938.
2. BUNCH, C. C.: Clinical Audiometry. St. Louis. The C. V. Mosby Company, 1943. Chapter V.
3. BUNCH, C. C.: Conservation of Hearing in Industry. *J.A.M.A.*, 118:588 (February 21) 1943.
4. DAVIS, HALLOWELL, CLIFFORD T. MORGAN, JOSEPH E. HAWKINS, JR., ROBERT GALAMBOS, and FRANKLIN W. SMITH: Temporary Deafness Following Exposure to Loud Tones and Noises. Committee on Medical Research, Office of Scientific Research and Development, September 30, 1943.
5. GARDNER, WARREN H.: Injuries to Hearing in Industry. INDUSTRIAL MEDICINE, 13:676 (September) 1944.
6. GUILD, STACY R.: A Method of Classifying Audiograms. *Laryngoscope*, 42:821 (November) 1932.
7. MCCOY, DAVID A.: The Industrial Noise Hazard. *Arch. Otolaryng.*, 39:327 (April) 1944.
8. PERLMAN, H. B.: Acoustic Trauma in Man: Clinical and Experimental Studies. *Arch. Otolaryng.*, 34:429 (September) 1941.
9. VENEKLASEN, PAUL S.: The Analysis and Measurement of Aircraft Factory Noise. Harvard University Research on Sound Control, Cruft Laboratory, Cambridge, Massachusetts, December 15, 1942.

False Aneurysm

S. THOMAS GLASSER, M.D., F.A.C.S.,
JOSEPH BLOOM, M.D.,
From the Surgical Service of the New York Medical College, Flower-Fifth Avenue Hospital

A FALSE aneurysm or pulsating hematoma is a rare expansile swelling resulting from the incomplete severance of an artery in which the opening is continuous with the contiguous sac containing escaped blood and limited by the rigid confines of the surrounding tissues.

In 1762, William Hunter[1] first reported two cases of false aneurysm following blood letting. Undoubtedly many of these lesions have been encountered but have gone unrecognized. It is probable that many cases will be seen as a result of penetrating injuries received during the recent war.

Elkin and Banner[2] have reported cases of aneurysm following operations in which ligation and transfixion of blood vessels resulted in pulsating hematomas. They cite one case of aneurysm following the apparently minor trauma of withdrawing blood from the brachial artery by needle aspiration. However, the rare occurrence of false aneurysm is due to the fact that trauma is more likely to cause arterio-venous fistulae. This phase of the subject has been aptly discussed by Homans[3] and is well worth repeating: "Pulsating hematoma, is a very rare lesion and the reason for this is easy to see. When a large artery is pierced, its companion vein is usually injured as well, so that if the individual survives and if the vessels are not at once ligated or repaired, an arteriovenous connection is made. Suppose, however, an artery alone is injured. The opening is made beneath a heavy layer of fascia. If it is not so directly connected to the outside world that the individual bleeds to death, a hematoma rapidly forms beneath the aponeurosis. Bleeding continues until the pressure within the hematoma equals the arterial pressure. If the hematoma is then left to itself it will tend to become so tense as to block the blood supply to the distal portion of the limb (in the case of the femoral, popliteal, axillary or brachial, for instance) and gangrene will ensue.

This is all the more likely to happen because the rapid loss of blood will have caused a decided fall of blood pressure. However, should the limb survive, the mass of extravasated blood will soon become organized at the periphery, its center remaining liquid. Only through this very rare combination of circumstances can a pulsating hematoma form, but actually it is seldom given an opportunity. For if an individual has been stabbed or shot in such a way that a large artery appears to have been injured and if a hematoma is rapidly enlarging, most surgeons will endeavor to ligate the vessel—and the artery either repaired by suture or ligated above and below the opening."

As previously mentioned, the wall of the false aneurysm consists of the delimiting surrounding structures. Later, a fibrous lining tends to form in the periphery of the so-called sac. Very rarely spontaneous cure may result from a clot which completely fills the sac and then organizes. Calcification in this area has been observed.

The differentiation of this lesion from an arteriovenous aneurysm may be clinically difficult, since both have expansile pulsations. However, the presence of a systolic bruit and thrill in the pulsating hematoma as compared with the continuous thrill (throughout systole and diastole) which is present in arterio-venous aneurysm is an important differential point. A true arterial aneurysm must also be ruled out, because the symptoms are identical with false aneurysm. The history of trauma bears great significance. In other words, an aneurysm occurring in the absence of injury favors the diagnosis of true arterial aneurysm. Arteriography will usually make the decision in the doubtful case.

The treatment of false aneurysm is surgical. Consideration must be given to the presence or absence of an ample collateral circulation. This is determined by the anatomic relationship of the artery to the collateral supply in which the "critical" point for ligation may be important. The duration or lapse of time since the original trauma will also influence surgical interference. The consensus of opinion favors a three-month interval as an arbitrary minimal time allowed for the development of a collateral circulation. However, there are many reports of successful ligations performed during a shorter interval than ordinarily recommended. Other factors may also influence an early decision for operation. For example extreme pressure on important structures such as nerves and associated with marked sensory disturbances or even paralysis, may necessitate prompt interference. If the hematoma is in close proximity to a joint, the limitation of movement due to local pressure may result in ankylosis. Serious ischemic and anoxic changes with the danger of gangrene in distal parts will also influence early surgery. When the collateral circulation is insufficient because of anatomical reasons or lack of sufficient time for development, but where surgery becomes imperative, arterial suture or vitallium tube anastomosis by the non-suture method may be attempted. It is not surprising that the decision to operate may be difficult.

The following case report contains all the features of a typical case of false aneurysm. The patient was a 17 year old white Porto Rican male, who had been stabbed through the left elbow with a thin-bladed knife during an altercation. The entrance wound was located on the lateral aspect of the elbow at the level of the radial head and the point of exit on the medial side of the antecubital fossa above the elbow joint just proximal to the medial epicondyle of the humerus. Both wounds were approximately one quarter of an inch long. A subcutaneous hematoma developed. The radial pulse was not perceptible by palpation. A heavy flow of blood from the wounds necessitated the application of a tourniquet. Shock was apparent. The face was pale and covered with a cold sweat. The blood pressure was 70/55 and the pulse 104; respiration 19. Laboratory work-up confirmed the impression of moderate blood loss as deduced from the following: specific

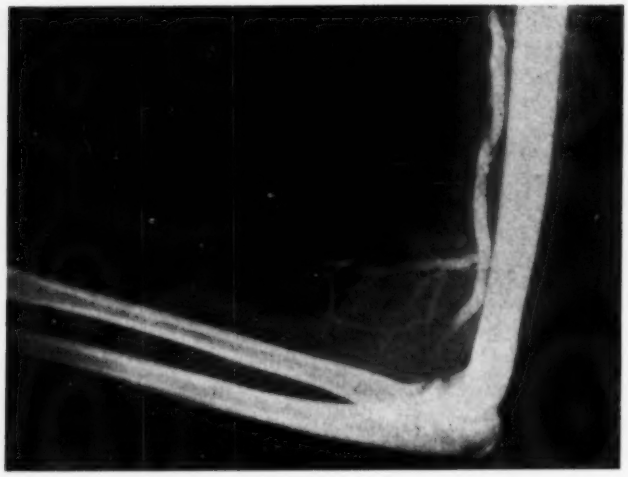


Fig. 1.
Venograph using diodrast 35% (10 cc.). Basilic and cephalic veins visualized. No arterio-venous connection visualized

gravity of plasma 1025; specific gravity of whole blood 1048; total plasma proteins 6.68, hemoglobin 10.9 grams, hematocrit 32.2.

The patient was put to bed and a firm pressure bandage was applied. A transfusion of 500 cc. of whole blood was given. Subsequent studies presented the following:

1. Auscultation over the mass in the antecubital fossa elicited a definite systolic bruit which was not audible during diastole.
2. Routine x-ray of the elbow revealed no abnormalities except for a large soft tissue mass the size of a plum.
3. Branham's sign was questionably positive for arterio-venous aneurysm. Digital compression of the aneurysm resulted in reduced pulse rates as follows: first day, from 96 to 90; second day from 86 to 84; third day from 64 to 60.
4. Venous pressure studies were inconclusive. Both arms registered 21 mm. of water.
5. The blood pressure varied in both arms; the diastolic in the injured arm 130/90 and in the contralateral arm 130/50.
6. The radial pulse continued imperceptible.
7. The elbow was firmly fixed in about 90° flexion.
8. The temperature and color of the forearm and hand were normal.

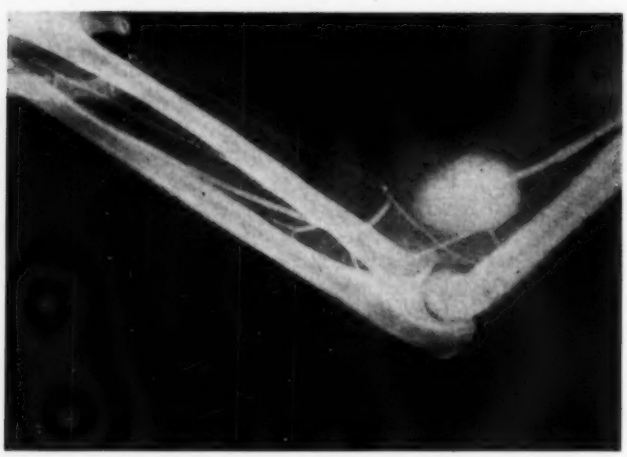


Fig. 2.
Arteriograph using diodrast 35% (10 cc.). Blood pressure cuff tourniquet at 250 mm. of mercury. Brachial artery visualized up to area of "pooling" which is obviously an hematoma because of circumscription and lack of continuity distally with the bifurcation. However, ample collaterals are visualized draining into the radial, ulnar and interroseous arteries

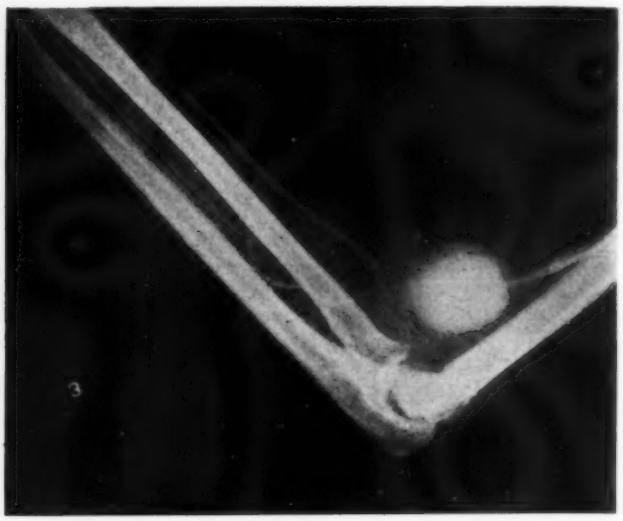


Fig. 3.
Arteriograph with blood pressure cuff tourniquet at 90 mm. of mercury. Identical with Fig. 2 except for arterial spasm in the terminal end of the brachial artery proximal to the hematoma, producing a narrowing effect

9. Venography, performed one month after admission (Fig. 1) illustrated the venous tributaries with clear visualization of the normal cephalic and basilic veins.

10. Arteriograms were obtained, (Figs. 2 and 3) following the injection of diodrast into the left brachial artery during the maintenance of a sphygmomanometer pressure at 250 mm. of mercury. Additional arterial views were also taken at diastolic pressure levels and repeated above the systolic levels. The distal end of the brachial artery showed a marked reduction in caliber. A well circumscribed area of increased density approximately 5 x 4 cm. in size was located in the antecubital region in all films, indicating the presence of an aneurysm. The narrowed distal end of the brachial artery was lost in the presumptive aneurysmal sac. No communication between the aneurysm and the venous system was observed. The radio-opaque solution passed by way of an arterial branch (anastomotica magna) just proximal to the narrowed end of the brachial artery, through the collateral circulation at the elbow and into the radial and ulnar arteries. This collateral circulation appeared adequate. It was our impression that we were dealing with a false aneurysm of the distal end of the left brachial artery.

Operation was performed about one month following the injury. An L-shaped incision was placed over the antecubital fossa with the horizontal limb of the incision corresponding to the transverse crease of the skin. The semi-solid aneurysmal mass was limited anteriorly by a tense fascia (lacertus fibrosus) which was incised transversely. This maneuver released a large amount of jelly-like dark red clot. The hematoma was about three inches in diameter, and filled the area covering the lower flaring end of the humerus. Most of the hematoma was clotted and well organized with fibrin formation. Evacuation of the clot was not difficult. The tendon of the biceps brachialis, the median nerve, and the brachial artery were exposed. At this stage, fresh bleeding was traced to the partly severed brachial artery. The actual site of the arterial tear was just above and proximal to the point of bifurcation of the radial and ulnar arteries. The next step was to completely sever the lacerated brachial artery. Although roentgenographic studies had visualized an ample collateral circulation, we were further assured of a competent blood supply by the presence of pulsa-

tion and vigorous bleeding in the cut distal end of the brachial artery. The sectioned ends of the artery were ligated and transfixed with silk sutures. The lacertus fibrosus was carefully approximated, thus greatly facilitating a firm closure. Drainage was not employed.

There was no evidence of postoperative circulatory deficiency. Recovery was uneventful. A slightly stiffened elbow responded to physiotherapy.

Discussion

THE indication for operation in our case was primarily influenced by the fear of a resulting ankylosis of the elbow joint, since both passive and active motion were impossible. The arteriogram definitely indicated a false aneurysm. The absence of a diastolic bruit also corroborated the diagnosis. Visual evidence of a good collateral circulation and the absence of signs or arterial insufficiency in the distal end of the extremity also influenced our judgment for operative interference. Furthermore, the possibility of a Volkmann's contracture ensuing was considered. The anatomic aspect was favorable since the laceration in the brachial artery was located distal to the anastomotica magna branch. The principle of ligation of the concomitant veins did not apply in this case because of the presence of small caliber venae comites in this region instead of a large single vein.

Summary

A CASE report of false aneurysm of the brachial artery is presented.

2. The value of arteriography is demonstrated.

3. The pathological and diagnostic features are discussed.

4. The indications for operation were outlined.

Bibliography

1. HUNTER, WILLIAM: Observations upon a particular species of aneurysm. *Med. Obs. Soc. Phys.*, 2:390, 1762.

2. ELKIN, DANIEL C., and BANNER, EDWARD A.: J.A.M.A., 131: August 3, 1946.

3. HOMANS, JOHN: Circulatory Disease of the Extremities, The MacMillan Co., New York, 1939, pp. 280-281.

COL. A. D. TUTTLE, United Air Lines medical director, demonstrates to company's medical staff features of new Geiger-Mueller counter for the detection of radio active material. United uses the machine as a safeguard to employees in its Cheyenne and San Francisco instrument shops and other points where radium paint is used or wherever metal filings are dumped. The same type of equipment was called upon to determine radioactive residuals after Pacific atom bomb tests to find out whether it was safe for people to enter the test areas. Here (from left) are DR. G. J. KIDERA, United's regional manager of medical service, Chicago; DR. A. C. LADD, regional manager of medical service, San Francisco; COL. TUTTLE; DR. W. A. BOCK, assistant to medical director, Chicago; and DR. L. C. BENESH, regional manager of medical service, Cheyenne.

New Methods in the Treatment of Tuberculosis

CARL H. GELLENTHIEN, M.D., F.A.C.P., F.C.C.P.,
Local Surgeon, A.T.&S.F. Railway,
Surgeon in Charge, Valmora Sanatorium,
Valmora, New Mexico

THE modern attack on tuberculosis uses many weapons.

In prevention of the disease, case finding and early diagnosis are now being stressed by means of lay and professional educational programs and mass x-ray surveys.

In treatment the present armamentarium consists of many aggressive procedures.

Koch's discovery of the tubercle bacillus in 1882 gave great impetus to the search for a "specific." For the past 64 years, the discovery of a "specific" has always seemed to be "just around the corner." These 64 long years produced a prodigious amount of work and effort with results that seemed always negative. We can console ourselves, however, with the thought that negative results have value. At least we know what is useless and ineffective. The diligent search for a specific treatment of tuberculosis continues unabated.

It was in 1895 that Roentgen's discovery of the x-ray gave us our most precise diagnostic procedure. Since then, the attempts to prevent, cure, and eradicate tuberculosis have improved greatly and are much more effective. In the last 50 years tuberculosis has been steadily disappearing. From 1921 through 1945, the death rate decreased approximately 4% annually, and we are now confident that it can be eliminated as the great plague of mankind. The tuberculosis death rate per 100,000 population declined from 245 in 1890 to 200 in 1904, to 100 in 1921, to 41.3 in 1944, and to the all-time low of 39.7 in 1945.

In October, 1928, there were 28 Santa Fe Railway employees receiving treatment for tuberculosis at the Valmora Sanatorium. Today there are only two.

In 1890, more than six times as many persons died of tuberculosis as die of it today. If tuberculosis continues to disappear at the same rate, and there is evidence that it may go even faster, we can expect a death rate of approximately 30 per 100,000 in 1950, and less than 20 per 100,000 in 1960. In other words, for every 12 persons who died of tuberculosis in 1890, one will probably die in 1950.

In 1904 there were only six tuberculosis control programs and 100 sanatoria maintaining about 10,000 beds. By 1942 these had multiplied over 11 times to 115,351 beds. The 1946 census is still unknown, but there should be many more beds now available for tuberculosis, owing to the universal expansion programs, including that of the Veterans Bureau. Few of the early beds were of the present-day minimum standards. Diagnostic methods were unreliable. Most of the cases when diagnosed were far advanced and usually died. Unfortunately our results today are not very much better. Isolation of the active, open case in 1904 was not thought important and dissemination of virulent tubercle bacilli went unnoticed throughout the nation. As a result, thousands of children died each year. Bovine tuberculosis was epidemic and tuberculous cattle were not yet being destroyed. Milk was then rarely certified or pasteurized. Extrapulmonary tuberculosis was common. Today, cattle and dairy herds are tuberculosis free.

It was in 1904 that the National Tuberculosis Asso-

Read before the meeting of the AMERICAN ASSOCIATION OF RAILWAY SURGEONS, Chicago, October 31, 1946.

ciation was founded and intelligently organized control programs were started in Chicago, Washington, New York, Philadelphia and Boston. One of the results in 1905 was the creation of the Valmora Industrial Sanatorium in New Mexico by Dr. Frank Billings, of Rush Medical College, Dr. Frederick Tice, of the University of Illinois, and Dr. W. T. Brown and their associates in Chicago and St. Louis. They were cognizant of the economic, social and medical problems associated with chronic disease and were largely responsible for the significant progress in sanatorium treatment.

In order to solve the economic problem, they sold to the larger corporations of the United States, a plan of underwriting their employees' medical and economic problems. Much has been said against "cold, heartless" corporations, but the Valmora Industrial Sanatorium stands as a symbol of their efforts to aid and help their fellow men and employees.

They started our present campaign for the prevention of tuberculosis and health education. They preached the doctrine that the most favorable climatic and personal environment were desirable for a disease that had no specific treatment; that summer heat waves with their increased mortality rates and exhausted patients, and cold bitter winters with their increased respiratory diseases were best avoided. Why not put the patient in the most desirable, favorable and effective environment? Thus in 1905 the Valmora Industrial Sanatorium of New Mexico came into existence.

1905-1915: From 1905 to 1915 many important advances in sanatorium treatment and health education occurred. General body rest and rest to the lung were emphasized. Pneumothorax was employed more frequently. In this period, treatment with tuberculin was tried but abandoned as ineffective.

1915-1925: From 1915 to 1925 chest surgery, especially phrenic exairesis and thoracoplasty, became more popular.

Tuberculin tests were first used in mass surveys making this period the time when modern control measures began.

Preventoria for children were built in an attempt to raise resistance or immunity against tuberculosis. Today they are being abandoned. The educational campaign for early diagnosis was increased and intensified.

1925-1935: The next 10 years, 1925 to 1935, brought great emphasis on the epidemiological phases of tuberculosis. Contacts were more frequently examined and morbidity and mortality statistics became more accurate.

Calmette and Guerin began their work with B.C.G. vaccine in France. They attempted to increase immunity in children.

Pneumothorax was being used more intelligently and selectively. Pneumolysis, oleothorax and bronchoscopy became more frequent.

Chest x-rays became more common and were claimed to be the most accurate diagnostic procedure we possessed. Percussion, auscultation and physical examination were shown to be not as accurate and reliable as formerly believed, and some relegated to them the role of accessories to x-ray diagnosis. Now we recognize limitations of the x-ray as a diagnostic agent. We realize that shadows are never pathognomonic, that lesions must be gross and of adequate consistency in order to be visible, and that only 75% of the lung is visualized. Thus the x-ray is now assuming its proper place as only part of our diagnostic armamentarium.

1935-1945: The following 10 years, 1935 to 1945, produced the highest efficiency of all control methods. The development of the photofluorograph and the automatic phototimer made mass x-ray studies possible. The search for a "specific" treatment was directed to chemotherapy and the antibiotics. Epidemiology and health education continued to be stressed.

The Division of Tuberculosis Control was created in the U. S. Public Health Service, owing to the efforts of the National Tuberculosis Association, its component State Tuberculosis Associations, the American College of Chest Physicians, and the American Academy of Tuberculosis Physicians. This resulted in better coordinated and more effective measures for the prevention, treatment, and control of the disease on a nationwide scale. Anti-tuberculosis programs in industry, general hospitals, and the armed forces were inaugurated.

In surgery, thoracoplasty procedures were refined and used more intelligently and selectively. Pneumonectomy and lobectomy became more common.

1945-1946: The present decade ending in 1955, we hope will show the results of a balanced integrated program, with widespread information about tuberculosis as an individual and community problem.

Health education will reach its peak efficiency and the unhurried thorough search for a "specific" treatment and other improvements in our attacks upon tuberculosis will be increased.

There will be more emphasis and expansion of:

1. Case finding efforts by increased use of mass x-ray surveys. Tuberculin testing will be continued as a means of screening.

2. The attempts to secure proper medical care and isolation will be intensified. The efforts to provide adequate sanatorium and outpatient facilities will probably be overdone. The tendency of political bureaus like the U. S. Public Health Service to overbuild is well known. One of the government leaders in the tuberculosis field recently stated that if the present hysteria to build new sanatoria and facilities is continued and if the morbidity and mortality rate of tuberculosis continues to drop at the present rate, there will soon be no need for them and they will probably be converted to "roadhouses and night clubs." An intelligent attempt to use existing facilities should be made before plunging into a building splurge.

3. The need for after care and rehabilitation is recognized and present effective measures will continue.

4. Some method of protecting the tuberculous family against economic distress, whether it be called a dole, charity, or invalidity insurance, will probably develop.

There are approximately 53 factors in the modern armamentarium for the treatment of tuberculosis. They are of varying importance but each contributes its part to recovery.

These factors may be divided into five main divisions.

I. Resistance (immunity).

II. Psychotherapy.

III. Measures to conserve resistance and promote healing.

IV. Measures directed against the tubercle bacilli and tuberculous processes.

V. General measures to promote health.

Immunity

ALLERGY—NATURAL RESISTANCE: While it is true that one may exhibit a resistance to a disease and yet not be immune to it, in tuberculosis common usage

FACTORS IN THE MODERN SANATORIUM TREATMENT OF TUBERCULOSIS

I. Resistance (Immunity)
II. Psychotherapy
  1. Intelligence of the patient
  2. Discipline
  3. Occupational therapy
  4. Rehabilitation
III. Measures to conserve resistance and promote healing
  1. Rest
    (1) General bed rest
    (2) Local rest
      (a) Non-surgical measures
      (b) Surgical measures
  2. Diet
  3. Climate
    (1) Fresh air
    (2) Heliotherapy
    (3) Lowered barometric pressure
      (a) Mountain altitudes
      (b) Equalizing pressure chamber
    (4) Variations in humidity
  4. Regulated exercise
IV. Measures directed against the tubercle bacilli and tuberculous processes
  1. Vaccines and serums
    a. Tuberculin (old)
    b. Tuberculin P.P.D.
  2. Chemotherapy
    a. Gold salts—Sanocrysin
    b. Copper salts
    c. Diasone
    d. Promine
    e. Promizole
  3. Antibiotics
    a. Streptomycin
    b. ?
V. General measures to promote health
III. Measures to conserve resistance and promote healing
  1. Rest
    (1) General body rest—bed rest
    (2) Local rest
      (a) Non-surgical measures
        1. Posture
        2. Shot bags, weights
        3. Braces
        4. Controlled diaphragmatic breathing
        5. Equalizing pressure chambers
      (b) Surgical Measures
        1. ARTIFICIAL PNEUMOTHORAX
        2. Extraperiosteal pneumothorax
        3. Oleothorax
        4. Intrapleural pneumolysis
          a. Closed (Thoracoscope)
          b. Open
        5. PNEUMOPERITONEUM
        6. Extrapleural pneumolysis
          a. Paraffin
          b. Pectoral muscle
          c. Rubber bag
          d. Plastic balls
        7. PHRENIC NERVE INTERRUPTION
          a. Temporary
          b. Permanent
        8. EXTRAPLEURAL THORACOPLASTY
          a. Paravertebral
          b. Subscapular
          c. Antero-lateral
          d. Parasternal
        9. Multiple intercostal neurectomy
          a. Temporary
          b. Permanent
        10. Scalenectomy
        11. Drainage pulmonary cavity
        12. PNEUMONECTOMY—LOBECTOMY

has made the terms immunity and resistance practically synonymous. They are used to express the ability of the individual to fight and overcome the tubercle bacillus. Resistance differs with each individual.

During the past 40 years the subject of resistance and immunity has received much attention. The literature on this subject is voluminous, with the result that a confusion has arisen through which it is difficult to see light. Just what it is that is active in killing the bacilli in the body, or rendering them harmless is not a man made thing. Apparently we either have it or we don't have it. It is true that immunity to tuberculosis may be acquired when we become infected with tubercle bacilli but seemingly we have not yet learned how to give a greater amount of resistance to one who has not enough to win his fight for life against tuberculosis.

We attempt to increase resistance by one of three methods:

1. By injecting dead bacilli.
2. By injecting virulent tubercle bacilli.
3. By injecting avirulent tubercle bacilli.

It is generally admitted that the injection of tuberculin or *dead bacilli* does not give adequate protection and that the use of *virulent* tubercle bacilli is too risky.

An attempt to produce immunity by using *avirulent* bacilli is receiving the most attention at the present time and a great deal of work has been done with Bacilli-Calmette-Guerin (bovine tubercle bacilli attenuated by 16 years culture on a bile potato medium). This treatment originally consisted of giving approximately three milliards or 3000 million of highly attenuated living tubercle bacilli to newborn babies, in the milk feeding, on the third, fifth, and seventh day after birth. At this time the intestine of the newborn is extremely permeable for microbic organisms. Now a multiple skin puncture technique and intracutaneous injection are recommended. The advocates of this form of treatment claim such vaccination protects those in a tuberculous environment from more serious infections. Dr. Calmette, of Paris, originated this procedure, and France has given its endorsement through the prestige of the Pasteur Institute.

The value and the limitations of B.C.G. are still to be determined however, and it is too early to give an accurate appraisal of this method. B.C.G. has, as Calmette stated, been employed extensively and its injection into infants exposed to tuberculosis infection cannot be considered harmful. That it is beneficial and more helpful than any other agent has not yet been definitely shown. Some recent experiments suggest a vaccine or dead virulent (Smooth colony) bacilli may produce as much immunity in guinea pigs as B.C.G. Comparative studies are now under way which may throw some light on the matter.

At present the U. S. Public Health Service is also planning mass vaccination to determine the value of B.C.G. for tuberculosis. Dr. Johannes Holm, of Denmark, has been called in as a consultant. He states that since 1930 the Danish results have been so favorable that in Copenhagen mass vaccination of everyone between the ages of 15 and 35 is now under way. Denmark has a lower incidence of tuberculosis—34 per 100,000 as compared with 39.7 per 100,000 in the United States. The Danish island of Bornholm has less tuberculosis than the whole of Denmark, but people leaving the island and coming back were bringing more tuberculosis to Bornholm. In 1940 one-fifth of the 50,000 population between 15 and 35 years were vaccinated. In this group, new cases dropped 80%.

There are those among the chest specialists in our country who emphatically oppose B.C.G. It is a weakened tubercle bacillus. Dr. Corper, of the National Jewish Sanatorium, states that no one can tell when an S or Smooth attenuated colony on the Petri dish will change to an R or rough colony, i.e., virulent. The Luebeck disaster in Germany when 67 babies died has never been satisfactorily explained. Supposedly the wrong test-tube containing virulent organisms was used, but it is still not proved that a Smooth nonvirulent culture inadvertently changed to R rough or virulent culture.

Next, many chest specialists contend that even mild infection is dangerous, for many infected in early life die from tuberculosis in later life. Advocates of B.C.G. however claim a mild infection is protection against later infection. One Public Health Service authority says: I think there isn't much doubt that the B.C.G.

vaccination gives a lot of protection for from eight to 10 years—but what a good many TB people ask is what will be the effect 25 or 30 years from now.

At present B.C.G. vaccine is not manufactured commercially. Making the vaccine is a test-tube proposition, and a tricky business, as it has to be used while fresh. In the Indian study, Aronson made his own vaccine, used none that was over two days old. Both in Denmark, and in the United States study, the vaccine was made from a culture obtained at the Pasteur Institute in Paris. A tiny drop of the culture is placed in a synthetic liquid medium, left from 12 to 13 days. During this interval, a heavy mold or mat forms, which contains millions of TB organisms of low virulence. This mat is removed, dried on filter paper, and then suspended in another fluid medium. Strength of the vaccine can be determined.

The vaccine is used only on people with no trace of TB infection, past or present. Danish experience has shown that it is best given at 14 years of age, when a child leaves school. For an unknown reason, mortality from TB is low between the ages of 2 and 14.

So, until we are given a direct method of *creating* resistance, our efforts in the sanatorium treatment of tuberculosis are directed toward *conserving* and *expending judiciously* whatever resistance the patient is fortunate enough to possess.

PSYCHOTHERAPY—This consists of:
(1) Intelligence of the patient. (2) Discipline. (3) Occupational Therapy. (4) Rehabilitation.

Time does not permit discussion of this phase of sanatorium therapy in this paper.

MEASURES to conserve resistance are most important. They can be divided into (1) Rest. (2) Diet. (3) Climate. (4) Regulated exercise.

Returning to No. 1, Rest. The individual factors to promote rest can be divided into (1) general body or bed rest; (2) local rest—which may be non-surgical as shot bags, weights, braces, controlled diaphragmatic breathing, and the Barach Equalizing Pressure Chamber.

The surgical measures to promote rest are becoming very numerous. The enthusiasm for each new procedure seems unbounded and older methods are promptly forgotten. It is embarrassing to look back a few years and see how ridiculous and naive we were. The newspaper picture of a well known surgeon with an injured back in a body cast hanging from the operating room ceiling doing an emergency phrenic exairesis testifies to our lack of good surgical judgment at times. When we became proficient with pneumothorax, there were those who insisted every tuberculous individual should have it. The same happened with phrenic exairesis. Now we seldom pull out the nerve, but usually do a crushing or phrenemphaxis which is temporary and causes paralysis of the diaphragmatic leaf from six to 12 months.

Time does not allow discussion of each individual factor, but at the present time there is a group in San Francisco and Louisiana who try to give every tubercular patient pneumoperitoneum. In attempting to discover the rationale for this hobby and its occasional complications, I was told that "Anyway it keeps the patients coming back and encourages them to continue their medical supervision."

Then came thoracoplasty with its many improved techniques and lowered mortality rates. Of course it was not long until the enthusiasts assured everyone that all other factors in treatment were passe. Other surgical collapse measures should be discarded. If a case was suitable for pneumothorax it should have a thoracoplasty.

But then we learned how to do a pneumonectomy or lobectomy. Today there is much excitement about these latter procedures. Last month at a meeting in Denver the staff of one of our large Army chest disease hospitals were very enthusiastic and felt that all the other surgical collapse procedures including thoracoplasty are inefficient and that pneumonectomy or lobectomy should be done in their stead.

The chest surgeon usually sees his patient for a relatively short time after surgery, and those of us in sanatorium work are prone to be more conservative for we have to take care of the case with the blown-out stump, the empyema, the thoracic fistula. We see the bitterness, despair, and lack of hope in the patient who, having had his pneumonectomy or thoracoplasty, has had a spread into the contralateral lung or a reacerbation in the remaining lung.

Surgical collapse and removal of diseased lungs have helped greatly to lower the mortality of tuberculosis. One should remember however that tuberculosis is not a localized body disease. We know that approximately 75% of all positive sputum cases have tuberculous ulcers in the bowel. The other organs are probably similarly infected. The modern treatment of tuberculosis should not be thought of as treatment of a cavity but as treatment of the entire body or patient. Rest in bed remains the fundamental principle in the treatment of pulmonary tuberculosis and collapse or resection therapy must always be regarded as accessory to and not a substitute for it. If surgery is indicated, the least serious and most suitable method for the particular patient should be chosen. Other methods may later become necessary depending on the results obtained by the first.

Under Climate (3) we have (1) fresh air; (2) heliotherapy; (3) lowered barometric pressures which include (a) mountain altitudes and (b) equalizing pressure chambers; and (4) variations in humidity. Climate is defined as the long term average of atmospheric conditions; weather, as the short cycle changes which make one day or hour different from the next.

"Contrary to the belief of some physicians, the safest course in the treatment of tuberculosis seems to be migration to the Southwest away from the disturbing storms. Furthermore, location in the Southwest should be high enough to afford freedom from severe summer heat"—so writes Dr. Clarence A. Mills, Professor of Medicine, University of Cincinnati, in his recent book, "Climate Makes the Man." Briefly a high dry sunshiny climate has proved to be the ideal.

Patients are living organisms that are affected by the weather and the climate. A beneficial climate may give enough added help in chronic illness to mean the difference between life and death. In fighting a disease like tuberculosis, for which no specific treatment is known, it is reasonable to use every favorable therapeutic procedure available, and any sensible person, who can, will take the advantages offered by a beneficial climatic environment. The conscientious physician gives his patients every opportunity for recovery by sending them to a beneficial climate when indicated.

THE measures directed against the tubercle bacilli and tuberculous processes are (1) vaccines and serums including (a) tuberculin (old) and (b) tuberculin P.P.D.; and (2) chemotherapy which is (a) gold salts, (b) copper salts, (c) diasone, (d) promine, (e) promizole; and (3) antibiotics, (a) streptomycin.

Chemotherapy in tuberculosis was revived when the sulfonamides were discovered. While none of these preparations worked in the treatment of tuberculosis, Feldman, Hinshaw, Pfuetze, Petter, Medlar and others in 1941 reported startling success in experimental tuberculosis. They used promin, a sulphone derivative (sodium pp'- diaminodiphenyl sulphone NN' di-dextrose sulphonate), diasone and promizole. It developed, however, that these preparations arrested but did not completely suppress tuberculosis in guinea pigs. Sensitivity to tuberculosis was not lost in any treated animal. Moreover, tuberculosis promptly resurged in animals apparently successfully treated for a prolonged period and they died after medication was stopped. The same unfavorable results were found when the sulfones were tried in humans. In addition various toxic effects resulted, of which anemia, cyanosis, agranulocytosis and gastro-intestinal upsets were the most important.

Clinical trials with promine, diasone, and promizole reported to date agree that therapeutic action is poor and systemic treatment of pulmonary tuberculosis is valueless.

When penicillin was discovered it was immediately used for tuberculosis in animals and humans but was found valueless. Recently two other antibiotics, streptothricin and streptomycin, have been found to exert impressive effects in vitro and in vivo against the tubercle bacillus.

Streptothricin is derived from a soil-inhabiting fungus (actinomyces lavendulae). It has proved too toxic and not as effective as streptomycin. Streptomycin is also derived from a soil fungus (actinomycoses griseus). It also prevents the growth of tuberculosis and is not as toxic. Tuberculosis has been eradicated in one-third of guinea pigs treated with it. The remaining two-thirds developed arrested tuberculosis.

The experimental use of streptomycin in human tuberculosis is now under way. If streptomycin proved to be the drug we have been looking for then the treatment of tuberculosis will be somewhat analagous to that of syphilis. Both syphilis and tuberculosis are destructive diseases; i.e., the organs and tissues of the body are actually destroyed. Anti-syphilitic drugs are specific and kill the spirochete in the body. Streptomycin does not kill the tubercle bacilli in the body, but simply prevents them from reproducing. So it can not be as effective as the antiluetics. In paresis where syphilis has destroyed parts of the brain or in locomotor ataxia where it has destroyed parts of the spinal cord, we are oftentimes able to kill every spirochete in the body with the drugs at our disposal. We are not able, however, to restore the destroyed brain or spinal cord tissues.

So it is with tuberculosis. The disease usually has existed for months, and varying amounts of the lungs and body tissues have been damaged and destroyed. If a large lung cavity has formed, surgical collapse measures like artificial pneumothorax or thoracoplasty are still necessary, for treatment with a drug will not prove sufficient.

In pneumonia the disease exists only a matter of days and the lung tissue is not destroyed, merely inflamed, and specific therapy produces marked and rapid results. Early tuberculosis should react the same way.

Healing and restoration of the body organs and tissues is very slow with tuberculosis, and the sanatorium with its proved beneficial healing results will probably remain as the foundation in the treatment of tuberculosis. If an effective drug is found sanatoria will be the first to use it and will serve as the treatment centers.

Streptomycin showed a suppressive rather than a sterilizing effect however, especially upon some of the more unusual types of pulmonary and extrapulmonary tuberculosis. No convincing evidence of rapidly effective bacteriocidal action was obtained.

In approximately 39% of the animals successfully treated the sensitivity to tuberculin disappeared, thus suggesting that a germicidal effect was exerted. Moreover, these animals were found to be sufficiently free from tubercle bacilli that the organisms could not be detected by the most delicate means of study; namely, infection of other guinea pigs with emulsions from the spleen. This suggests to Feldman and Hinshaw that if sufficient doses of streptomycin are administered for an adequate length of time to guinea pigs, actual sterilization may not be an impossible goal. The authors reported that the streptomycin preparations used had a low toxicity for guinea pigs in doses of 6000 units per day, and were tolerated without recognizable deleterious effects for a prolonged period.

In humans, however, streptomycin is capable of producing side reactions of varying severity. Most of those thus far reported have been transient and not of a serious nature, although in some cases it has been necessary to reduce the dose or to discontinue administration of the drug.

The following reactions have been recorded:

1. Pain and tenderness at local site of injection.
2. Headache.
3. Fever.
4. Skin eruptions.
5. Tachycardia and fall in blood pressure.
6. Vertigo, tinnitus, deafness.
7. Paresthesias about the face.
8. Flushing of the skin.

Although a febrile response of the true pyrogen type does not occur with streptomycin, fever beginning 24 to 48 hours or longer after the initiation of treatment has been observed. In a few cases an erythematous rash has appeared, which has vanished after discontinuance of the drug. Some patients experience mild malaise and occasional muscular aches during the course of therapy.

Sensitization to streptomycin has been reported in a case in which treatment had been interrupted for a few weeks. Resumption of therapy was followed by a febrile reaction. However, treatment was continued without further untoward reactions after desensitization had been accomplished by the customary methods.

The administration of 3 to 4 gm. per day over a period of months has resulted in an apparently selective neurotoxic effect on the eighth cranial nerve in approximately 10% of the cases. This complication has also occurred infrequently in patients who have received smaller dosages over a shorter period of time.

Vertigo and tinnitus, usually intermittent, were noted initially by many of these patients; the disturbance of equilibrium was not readily detected while they were confined to bed, although some dizziness was felt on changing position. However, the disability was so severe in some patients when standing erect that walking without assistance was impossible. Clinical recovery following discontinuance of therapy has been very slow. In the patients observed thus far, there is no objective evidence of improved labyrinthine function, although there does occur some functional compensation for the disability.

It is suggested that the occurrence of diminished auditory acuity, tinnitus, vertigo, or any disturbance of function of the vestibular apparatus is an indication for discontinuing the administration of streptomy-

cin, unless the disease is one in which the prognosis would be grave if no treatment were given, and in which the pathogenic organism has been proved susceptible to the drug.

A preliminary report of a study of the effects of streptomycin on tuberculosis in humans by Hinshaw and Feldman is encouraging. They report a limited suppressive effect especially upon some of the more unusual types of pulmonary and extrapulmonary tuberculosis. No convincing evidence of rapidly effective bacteriocidal action was obtained. However, apparently significant improvement was seen in cases of early and extensive hematogenous forms of tuberculosis, early miliary disease, tuberculosis of the gastro-intestinal tract, and suppurative tuberculous lymphadenitis.

Any drug capable of destroying tubercle bacilli in the human body will be most effective if administered soon after the initial invasion occurs. Periodic tuberculin testing of uninfected individuals, which now constitute the majority in this country, will detect primary tuberculosis if it develops with almost 100% accuracy within eight weeks after tubercle bacilli are focalized. Then and for some time thereafter one might expect to destroy all tubercle bacilli with a satisfactory chemotherapeutic agent. Thus the disease could be cured in the strict sense of the word before it has caused significant destruction of tissues. The only criterion of such cure would be the complete loss of allergy to tuberculoprotein, as indicated by subsequent tuberculin tests.

In the light of present evidence, streptomycin must be regarded strictly as an adjunct to, and not a substitute for approved and time tested forms of treatment. We are hopeful that a far more ideal chemotherapeutic agent for tuberculosis may be found.

Conclusion

THE next few years will show the value of B.C.G. vaccination in creating immunity and whether it is desirable to initiate a primary infection in everyone. It would not seem desirable according to our present knowledge.

Streptomycin has antibacterial properties against the tubercle bacilli in vitro and vivo. The two most important limiting factors are its toxicity and the ability of the tubercle bacillus to develop a resistance to the antibacterial effects of streptomycin.

Chemotherapy apparently will have very definite limitations in the treatment of any chronic infection with the pathological and clinical peculiarities that tuberculosis has. There is as yet no "specific" treatment for tuberculosis, neither chemotherapeutic nor biological. There are more than 53 individual factors in our present armamentarium. They are of varying importance, and all exert a beneficial effect when properly used. The treatment of pulmonary tuberculosis is not, however, mainly the treatment of cavities; it is the management of a human individual. Rest remains the very foundation of all treatment of active pulmonary tuberculosis. Other medical and surgical methods are accessory to and not a substitute for rest.

The aim of our modern treatment is not only to stop the progress of the lesion and restore the patient's capacity to live and work but also to prevent him from infecting others.

Bibliography

1. COOK, EDWARD N., GREENE, LAURENCE F., HINSHAW, H. CORWIN: Streptomycin in the Treatment of Tuberculosis of the Urinary Tract. *Staff Meetings, Mayo Clinic*, 277, July, 1946.
2. COOPE, ROBERT: Diseases of the Chest. Williams and Wilkins Co., Baltimore, 1945.
3. GELLENTHIEN, CARL H.: Bacteriology of Tuberculosis. *New Mexico Health Officer*, 18, December, 1945.
4. GRENVILLE-MATHERS, R., PICKERING, DENNISON, HALES, G. R.: Experiences with Promanide in Tuberculosis. 68, *Bri. J. Tuber.*, April, 1946.
5. HINSHAW, H. CORWIN, HERRELL, WALLACE E.: The Clinical Administration of Streptomycin. *Med. Clin. North America*, 855, July, 1946.
6. HOLM, JOHANNES: BCG Vaccination in Denmark, Public Health Reports, 1298, September, 1946.
7. KEEFER, CHESTER: Streptomycin in Infections—Report of One Thousand Cases. *J.A.M.A.*, 70, September, 1946.
8. Merck & Company: Manufacturing Chemists, Streptomycin Merck, Rahway, New Jersey.
9. MYERS, J. A.: Chemotherapy in Tuberculosis. *Dis. of the Chest*, 72, January-February, 1946.
10. NEIMAN, IRWIN S.: Anti-Tuberculosis Vaccination. *Illinois Med. J.*, 131, August, 1946.
11. NICHOLS, DONALD R., HERRELL, WALLACE E.: Streptomycin. *J.A.M.A.*, 200, September, 1946.
12. PINNER, MAX: Pulmonary Tuberculosis in the Adult. Charles C. Thomas, Springfield, Illinois, 1945.
13. REIMANN, HOBART A.: Antibiotics. Chicago Medical Society Bulletin, 137, September, 1946.
14. ROSENTHAL, SOL ROY; BLAHD, MARGERY; LESLIE, ELEANOR I.: Ten Years' Experience with BCG (Experimental and Clinical). *J. Pediatrics*, 470, May, 1945.
15. TICE FREDERICK; SWEANEY, HENRY C.; DAVISON, RICHARD: Cutaneous Reinfection in Pulmonary Tuberculosis. *Am. Rev. Tubere.*, 475, June, 1946.

Neuropsychiatric Conditions

—In Railroad Employees—

F. GARM NORBURY, A.M., M.D., F.A.C.P.,
Medical Director, The Norbury Sanatorium,
Consultant in Neurology, Wabash Railroad,
Jacksonville, Illinois

THE connotation of railroad employees that most people not connected with railroads have is that of members of the train services. They are the ones with whom the travelling public comes most in contact. The shipping public is aware of this group and also of the freight office force. However, one must keep in mind executive, administrative and office workers who manage finances, keep records, handle personnel problems. Then there are the great mechanical and maintenance groups and those in supply and upkeep functions. Truly a complex organization of human beings for whose better health and more efficient work the members of this organization are here to consider recent advances in this field of medicine.

These various groups are made up of individuals subject to illness and injury the same as other people, really less liable to these than many. The safety record of the railroads represented here is admirable. Regular physical examinations of most workers make the health record good too, so that a railroad employee lives and works in one of the safest and healthiest major occupations in this country.

It is with individuals that we as doctors deal. No matter what the condition, whether disease or injury, it is the individual person who has developed sickness or met with accident who is under our care. Many more factors enter into the reaction of the individual than formerly. Some of these are professional, some legal, some administrative, some political in both a broad and narrow sense. Interpersonal relationships are a part of each of these factors. Those of us interested in neuropsychiatry feel that interpersonal relationships affect the mental health of everyone, play a part in many nervous and mental disorders.

Consequently, a discussion of neuropsychiatric conditions in railroad employees takes what has been said above as a premise. A perspective is necessary, which includes persons in the group, yet singles out the individual, studies the response to disability and how this response is affected by persons and things in the environment.

Read before the meeting of the AMERICAN ASSOCIATION OF RAILWAY SURGEONS, Chicago, October 31, 1946.

The Wabash Railroad through its Employees' Hospital Association has, since 1919, incorporated these principles in study and management of such situations. Dr. Frank P. Norbury was appointed consultant in neurology in that year and served until his death in 1939. He enjoyed greatly his work for the Wabash as have others of us who were associated with him and have tried to follow him in it. Examinations on a consultation basis were made as office procedures at first. Later the arrangement was extended to include patients in the Wabash Hospital at Decatur and some who entered the Norbury Sanatorium in Jacksonville. Since 1939 practically all patients have been seen by the Sanatorium staff at Jacksonville. The Hospital Association has been generous in authorizing admission for study of special situations. This phase of observation is important when decision is necessary as to whether a patient should be relieved from, or returned to, duty. The hazard to the individual and the type, character and responsibility of his position must be studied. Seniority in the organization, personnel relationships with the Brotherhoods, and eligibility for retirement often come into the picture as well. These elements are no different for nervous and mental disorders than for other disabilities. There is that difference, however, that changes may not be obvious at once, that capacity and competency may be on the up- or down-grade. Hence the need for the perspective referred to above and the value to us of the opportunities for observation that have been made available.

Patients seen under such circumstances show a wide range of diagnoses. Obvious total and in many instances permanent disabilities such as extensive traumatic injuries to the nervous system, complete hemiplegias with residuals or degenerative psychoses appear relatively infrequently in this series. The screening by local surgeons and staffs of the Association hospitals took care of most of these. Were they included the total would be larger, the differential diagnoses easier.

Records of 452 patients were considered complete enough to warrant analysis for this paper. This is not a large series but is rather a selected one for reasons just given. The number of different diagnoses is 54. An unorthodox classification has been used in order to bring out points that it is hoped will be of interest.

TABLE I.

Conditions primarily neurological		73
Psychoses, potential, active, convalescent or recovered and sent in for evaluation primarily toxic, traumatic or infectious	72	
Primarily psychogenic	47	
		119
Psychoneuroses		113
Epilepsy and narcolepsy		21
Acute infections of the nervous system		15
Tumors of brain or spinal cord		11
Alcoholism		3
Mental deficiency and psychopathic personality		3
Medical conditions with neurological or mental components		94

This table shows the major groupings. It is set up for clinical rather than statistical purposes. Enough patients are assembled in the psychotic group, even though out and out mental disorders were in the main screened before coming to the attention of the consultant, to make this the largest with 119. The psychoneurotics follow closely after in numbers with 113. Medical conditions with nervous or mental components are third with 94 and neurologic disorders *per se* make up the last of those of any size with 73. It might be said that this is the sort of thing that would be expected in this selective material. The second and third groups, psychoneuroses and medical conditions with neuropsychiatric components are patients seen in any office or general hospital practice. They add up to 207, or almost one-half the total number. Their disabilities are sometimes not thought of as affecting their efficiency in their work from the nervous system angle and are considered from the standpoint of the medical condition or as "crack pot" or "screwy" even though not actually mentally disordered. Yet those are the people whose energies, if properly directed, whose emotional problems if adequately solved, make them good productive workers.

The classification of the conditions essentially neurological embraces those diagnoses usually considered under this heading. Neuritis headed the list, infections or toxic leading, then traumatic. The traumatic elements in the various classifications will be discussed separately. Other patients presented situations such as multiple sclerosis, neuralgia, paralysis agitans and hemiplegia without marked mental change, various organic cord and brain conditions. As emphasized previously, individual study to treat the patient and to help him and the Hospital Association with reference to his adjustment in his ability or inability to carry on a job have been thought of as major responsibilities in this type of work.

This approach is important in the psychotic group. It is essential for instance in the train service, dispatcher service and other responsible activities that persons with judgment defects, paranoid trends or delusionary ideas be relieved from duty even though anti-social behavior may not as yet have become marked. It is equally as important in our opinion that patients who have recovered from a mental disorder be given the chance to return to duty. Present-day treatment of many mental illnesses offers more of a chance to these people. If by reliable tests in the hands of competent observers memory, judgment, emotional state and social adjustment are adequate it is our belief that a patient can be trusted to resume his occupation. This applies most frequently when the diagnosis is manic-depressive psychosis or involutional melancholia but the post-infectious, the toxic delirium, some of the post-traumatic and some of the neurosyphilitic patients will also come under this favorable heading. Recovery is recovery whether it be from measles, appendicitis, paresis, manic-depressive psychosis or broken leg. The sooner physicians and laymen as a whole recognize this and accept the recovered mental patient without holding it over him the better mental hygiene we will be practicing.

It will be noted that the psychotic group is divided into two headings. One so-called organic class, the arteriosclerotic, has been included under the heading of the medical condition with neuropsychiatric components. There were 50 patients in this class but not all by any manner of means were psychotic. Subject to the limitations of and with special reference to the diagnosis of arteriosclerosis it was decided to make the separation on this basis. That leaves neurosyphilis, post-traumatic, post-infectious and toxic states in the subheading referred to.

Neurosyphilis was diagnosed 44 times in this series or a fraction under 10% of the total. The incidence was greater in the fore part of the series than in the later years. Neurosyphilis is less common in private and public clinics and hospitals than was true even a decade ago. Again modern therapy has done and is doing a great service.

Post-traumatic, post-infectious and toxic states make up the remainder of this subheading. Unless these patients are too disturbed they can be cared for

as a rule in general hospitals. The psychoses primarily psychogenic include manic-depressive psychosis, involutional melancholia, dementia precox and paranoid states. For reasons stated previously the obvious and disturbed patients in this series were relatively infrequent. Borderline states for decision as to advisability of continuing duty or for evaluation of degree of recovery following acute illness with recommendation about return to duty made up the majority. The criteria for either action have been outlined.

The group of psychoneuroses is next. The diagnosis of one or another of the psychoneurotic states was made more frequently in the latter years of the period. It is felt that this means greater recognition of the need for seeking further into the cause of illness when objective signs are lacking. Emotional conflict can produce definite changes in function. It is being more often checked on. Increasing complexity of environment, stress elements of depression years and after, then of war years are also important factors. Measures to prevent, to treat and to rehabilitate people who have mild or severe psychoneurotic symptoms are better known both by patient and doctor. Patients themselves come in for help more frequently. Doctors are better able to discern the emotional factor. While these illnesses do not fall within the category of the major mental disorders they are distressing to individual, family and associates. On the job efficiency is impaired greatly. Apprehension, feeling of anxiety or tension, hysterical rejection phenomena, compulsive mannerisms made life miserable for the patient and unpleasant at least for others. Much can be done by explanation of the mechanism to the person, who more often than not holds a fairly responsible position. These situations are prone to occur more frequently in the brain worker than in one whose duties are essentially of manual nature. Whether there is a compensatory mechanism for the person who finds outlet in the expenditure of energy by heavier physical work or whether the one whose responsibilities are greater has more conflicts and cross currents to meet is beyond the scope of this paper. Be that as it may, attention to the personal problem elements in the case of the railroad or other employee for whose symptoms no structural basis can be found will be of help in keeping the individual on the job.

Arteriosclerosis in its general or cerebral manifestations accounts for 50 of the 94 patients while hypertension which may or may not be primarily arteriosclerotic was diagnosed in 14 others. Without attempting to work out the age of these patients it may be reasonably assumed that in most instances they were older employees, senior in point of service and experience and, therefore, valuable to the system. While one cannot stop the process of growing older, for it is happening to all of us every day, much can be done to ameliorate some of the distressing features. It has long been recognized in internal medicine that less load placed on the patient with arteriosclerotic heart disease will enable the heart to function with greater efficiency. The same proposition applies even more forcibly in early cerebral vascular conditions. A simpler environment, less responsibility, adequate rest will enable a person to utilize the knowledge and experience that the years have brought and to stay in the game a while longer. On the other hand continued carrying of the load of all that the traffic will bear definitely hastens the memory and judgment defects, accentuates irritability and irascibility, those defense reactions which the patient sets up because he cannot meet the demands the environment places upon him. So this is a plea for the valued employee who has given years of his life to a railroad. He may resent being given lighter work, put on a switch engine instead of pulling a limited. If he does this too much and too longer it is a sign that his judgment really is impaired and he needs really to be retired. If he accepts it gracefully as an indication that it is desired to retain his services with lessened responsibility on him and the railroad by reason of his advancing years, then good will has been built up for both sides.

The remaining medical conditions were essentially chronic situations. Diabetes, arthritis, heat exhaustion, hyperthyroidism, pernicious anemia and the like all have neuropsychiatric elements. Some times these elements affect the individual more or are less easily controlled than the underlying condition. Then the internist and the neuropsychiatrist must decide on both treatment and disposition of the patient.

The rest of the diagnostic classifications used in this series are self-explanatory. It was of interest to find only three patients wherein alcoholism was the primary condition. This is a lower proportion than in our Sanatorium cases as a whole. It speaks well for the underlying sense of personal responsibility of the employee group, notwithstanding some popular misconception to the contrary about railroad people. Epilepsy and narcolepsy occurred 21 times, about equally divided between operations and office workers. Naturally no person subject to convulsive or narcoleptic attacks should be on operative duty, nor do we think such a person should drive a car. Proper management and anti-convulsant medication enables most patients to carry on a gainful occupation in some type of work. The acute infections of the nervous system, the tumors and the defective states which make up the rest of the headings offer no different problems for railroad than for civilian occupations.

As indicated in the first paragraph of this paper, an association often thought of for railroad employees is with train or at least operative service. By the same token disabilities that they may incur might be thought of as essentially of traumatic origin. Many of the papers on this program bear this out. As regards neuropsychiatric conditions it was thought of interest to analyze the 452 records in an attempt to pick out those in which railroad trauma was the causative factor. This analysis is shown in Table II.

As regards the various traumatic neuropsychiatric conditions themselves some comment may be made. The traumatic neuritides should in the main do well. Where nerve damage is severe and associated with other tissue damage neurolysis and in certain instances nerve implantation with tantalum foil tunnel to protect the implant is indicated. As commanding officer of a neurosurgical hospital in the European Theater I saw many examples of what expert neurosurgeons can do for nerve, spine and head injuries.

The post-traumatic psychoses are an interesting and important group. They and the traumatic neuroses are more apt to be causes for controversy or litigation between patients or relatives and employees than any other. It is important therefore to have an accurate history and knowledge of the patient's personality characteristics prior to the injury and to work out the psychiatric factors with respect to personality change subsequent to it. The more obvious situations, unless there are persistent neurologic or psychic changes indicative of gross cerebral damage, usually do pretty well when edema and circulatory imbalance subside. It is the border line condition that is more difficult to evaluate. Time must be given for reparative processes to take place. Time also must be given for observation of the patient's reactions.

TABLE II.

Conditions primarily neurological			73
Traumatic neuritis	19		
Hernation of nucleus pulposus	1		
		20	
Psychoses			119
Post-traumatic		18	
Psychoneuroses			113
Traumatic neurosis		22	
Medical conditions with neurological or mental components			94
Direct trauma	2		
Arthritis	3		
		5	
All other classifications			53
Traumatic	0		
Total traumatic		65	452

These last statements also apply to the traumatic neuroses but here prolonged hospitalization and development of the invalid reaction must be prevented whenever possible. Here too a knowledge of the personality characteristics prior to the injury is important. The individual with a previously unstable personality is much more apt to show persistent hysterical anesthesia, contracture or paralysis or have anxiety and tension states following injury than the well-poised person. Energetic constructive psychotherapy, and prompt settlement of any compensable claim with as rapid return to some type of work as possible are the main features of management for this group.

Summary and conclusions to be drawn from this study are in brief as follows: In a previously screened group of railroad employees seen on a consultation basis all types of neuropsychiatric conditions were observed. Even though one connotation of disability among railroad employees is that of trauma as a factor it was such in only 65 of 452 patients who had various nervous and mental symptoms and disorders.

Psychoneuroses and medical conditions with neurological or mental components made up almost half the total. The importance of a study of the individual patient's reaction to disability both from the standpoint of care and treatment and that of his or her relation to emotional, environmental and administrative factors is stressed.

Persistent Hematoma

—Case Report—

EDWIN DE JONGH, M.D., and H. W. GEHRING, M.D.,
Detroit

J. v., a 24 year old white male, was hired on November 10, 1942, and advanced rapidly as a draftsman.

On July 16, 1945, he came to the medical department stating, "Three weeks ago I bumped my knee on my desk at work and would like to have someone look at it." It was noted that there was slight discoloration, but no tenderness. He was advised to return to the medical department.

On March 13, 1946, he was examined and found to have a hematoma about one centimeter in diameter on the lateral aspect of the right knee. At this time he stated that the area pained only occasionally when he struck it or when he put great pressure on it. He was reassured and advised to return.

He returned on October 10, 1946. Examination revealed a soft but not fluctuant dark purplish-red tumor about two centimeters in diameter. Firm enlarged inguinal lymph glands were present. A punch biopsy of the lesion at this time revealed small particles of sanguinous caseous appearing material. The referring pathologist, from the small amount of material obtained, suggested melano-sarcoma of the skin.

History showed usual childhood diseases, T. and A., and a well healed fracture of the left forearm. The family history revealed the mother to be 62 years old, living and well; father 64 years old, living and well, three sisters, living and well; two brothers, living and well; and one brother died with the cause of death unknown to the patient. No history of tuberculosis, diabetes, cancer, or mental disturbance. Physical examination showed nothing remarkable. Chest x-ray revealed old tuberculous scarring in the apices. Urinalysis and blood were negative.

In the state of Michigan if it can be shown at the Board of Labor and Industry that a cancer developed at the site of a contusion which was serious enough to cause hemorrhage, aggravation of and, therefore, liability for the cancer is an almost certain award. Perhaps that is as it should be, because very few doctors in good standing can deny a possible relation. Hence the patient was accepted as compensable and hospitalized.

Wide excision of the lesion of the knee as well as radical dissection of the inguinal glands was done on October 18, 1946. It was found that the primary lesion was entirely localized in the skin and did not involve underlying tissue. Three of the glands removed from the groin were markedly enlarged and black in color.

Postoperative course was uneventful and on November 2 the patient was discharged from the hospital. He returned to work on November 18, 1946, and is asymptomatic.

There was a divergence of opinion among the pathologists as to the tissue removed.

Pathologist Number One believed the lesion to be a hemangioblastoma with considerable recent and old blood pigment. He believed the lesion might recur locally if incompletely excised. In his opinion the inguinal lymph nodes contained phagocytized blood pigment.

Pathologist Number Two believed the lesion to be a hemangioendothelioma that might recur locally.

Pathologist Number Three believed the lesion a hemangioblastoma with old blood pigment in the nodes.

The fourth pathologist thought the lesion to be a hemangioblastoma with metastasis to the inguinal lymph nodes.

The fifth and final pathologist expressed himself thus: "The seven sections from this patient give no evidence of a melanoblastoma. There is an inflammatory hyperplasia in the lymph node with heavy phagocytosis of blood pigments showing that this node was receiving drainage from an area of hemorrhage. Likewise the cutaneous lesion also shows a hematoma with an enormous amount of iron-containing pigment. The original specimen, aspiration biopsy, cannot be disposed of so easily. It shows actively proliferating stroma cells and squamous epithelium with much yellowish brown pigment. An iron reaction on this block would be necessary to establish the nature of the pigment, with certainty. In view of the findings in the later material, it seems probable that this also is blood pigment. Therefore, I find no proof that this patient has ever had melanoblastoma."

SUMMARY: Three points are rather outstanding. First, the willingness of the corporation to bear the responsibility of this case at the time when the prognosis was thought to be so poor. Second, the failure of the pathologists to agree; disagreement ranging from a high degree of malignancy to a completely benign lesion. Third, if benign, the 20-month duration of this hemotoma is very unusual.

Industrial Medicine
Reg. U. S. Pat. Off.
The Journal of
Industrial Health, Traumatic Surgery and Occupational Diseases
Established 1932
Executive, Editorial and Publication Offices:
605 No. Michigan Ave., Chicago.

Editor: C. O. Sappington, M.D., Dr. P.H.
Associate Editors:
James T. Case, M.D., F.A.C.S.
Volney P. Cheney, M.D., F.A.C.S.
Hart E. Fisher, M.D., F.A.C.S.
Otto P. Geier, M.D.
Lydia G. Giberson, M.D.
Emery R. Hayhurst, M.D. Irving Gray, M.D., F.A.C.P.
Edward C. Holmblad, M.D., F.A.C.S.
Rutherford T. Johnstone, M.D.
Willis W. Lasher, M.D., F.A.C.S.
Oscar L. Levin, M.D. Robert T. Legge, M.D., F.A.C.S.
Carey P. McCord, M.D. Christopher Leggo, M.D.
Wm. D. McNally, M.D.
M. N. Newquist, M.D.
O. A. Sander, M.D.
Frederick W. Slobe, M.D., F.A.C.S.
Publisher: A. D. Cloud.

Volume 16 MARCH, 1947 Number 3

Clothes That Breathe

MAN'S emancipation from foolish clothing is far from complete. Apart from casual garb, the civilian male's sole major triumph over clothing tyranny within the past four decades, derived from his repudiation of that neck choker, the stiff collar. Sartorial wisdom of the sexes is season linked. The male dresses absurdly for summer comfort while woman dresses admirably. For winter a reversal in absurdity occurs. Men overdress in summer; women underdress in winter. The perennial conflict between men and women over temperatures and drafts and particularly in comfort air-conditioned areas ordinarily may not be charged to errors of design or operation of equipment, but instead to variations in the departure from nudity. No comfort air-conditioning may be expected to satisfy all individuals. Well measurable physiologic deviations for individuals and groups representing divers body types counsel individual clothing adjustments as providing the only sound prospect for weather peace among humans assembled in any atmosphere—air conditioned or otherwise.

With an eye more on men than women, on the "white collar" gentry rather than the man in the shop, more concerned in summer comfort than winter comfort, the American Medical Association's Committee to Study Air Conditioning, bespeaks better ventilated garments. No small portion of bodily comfort in hot weather depends upon the continuous removal of the body's envelope of heated, wetted air. The white-collared man is a being in a sack pulled tight at the neck by a constricting collar, made worse by his neatly tight tie. This is the emblem of his group, the earmark of his dignity, but, left intact, the unfailing source of much of his hot weather discomforture. Banishment of the constricting collar, soft or stiff to that limbo harboring bustles, detachable cuffs, hightop shoes, wigs, West Point uniform collars, and such, provides no earnest that all the ills of hot weather promptly will disappear. But this opening up of the sack at the top as women long ago learned, along with better ventilation of shoes, hats, under-garments, will make summer's heat nearer bearable. For summer comfort the best dressed male (who no less has suffered mightily because of his dress singularity) is the enlisted sailor, attired in his white cottons, bell-legged and fully open-neck. There is ventilation near perfection. Every man knows he is more comfortable in his casual clothes, his sports attire, his unrestricted neck. Possibly in a world always needing discipline, dignity of demeanor and character must always be accompanied by sartorial dignity. If so, obsequious males will continue to conform. Per contra, would all be lost if man be given the boon of a little more nudity comfort as he goes about his affairs in the halls and marts of lofty-mindedness?

—Carey P. McCord, M.D.

Placement vs. Compulsion

IT IS PROBABLE that few industrial physicians realize how close they are to the very heart of the difference between totalitarianism and the American way. Their first contact with the prospective worker is the pre-employment examination. This has become, in practice where not in name, almost universally the pre-placement examination. The man is studied to ascertain what kind of work he can do, what he is fitted for as a physical capacity, and with how much satisfaction from his own standpoint, and efficiency from his employer's, he can perform whatever job is within his possibilities. Placement, to the end of physical, temperamental, emotional, and even economic adjustment, has become a science, exemplified in the application of many fine brains to the study of its problems and many happy and efficient employees whose job situations are the results of such study. The whole development centers about the individual; it is inherent in the American system to adapt what he possesses to what the system needs, and to multiply the opportunities for the two to conform. And the industrial physician's practice is the laboratory where this is being done; his office is the place where men and material size each other up with the view of long and profitable relationship.

Contrast this with the position of the individual in a system where the State is supreme and he is merely its creature. It has been, is now, and must be the policy of totalitarianism in whatever form it is established, to put political aims ahead of individual welfare. The "plan" is the thing; the result must be achieved at all costs, and the individual exists for the sole purpose of his participation. The Pyramids are a memorial of totalitarianism and its "five-year plans" in ancient times. If mankind has progressed since then, one measure of his enlightenment is his conception of mass production as involving the "mass" of materials rather than the "masses" of workers—together with his use of the pre-placement examination to fit the individual into it, instead of the overseer's lash to drive him. . . .

At Last—

A simple, disposable Penicillin Oil-and-Wax syringe

1. PULL-BACK PLUNGER . . . permits you to test for accidental puncture of a vein just as you always do. Simply pull back on the plunger. If no blood is aspirated—inject with confidence.

2. READY-TO-USE . . . . . Cutter's Penicillin Oil-and-Wax syringe is ready to use *"as is!"*

3. NO HEATING . . . . . This suspension at room temperature behaves like salad oil—rather than like butter. Easy to administer. (Cutter P.O.B. in vials *also* flows freely at room temperature!)

4. "KNEE-ACTION" HILT . . . acts as shock absorber. Needle is mounted in rubber, allowing "play" without danger of snapping needle. After using, toss the entire syringe away.

NO NEED TO ACCEPT A SUBSTITUTE . . . If these easy, ready-to-use Cutter syringes are not in stock, your pharmacist can get them . . . if *you* say the word.

Cutter Laboratories
Berkeley, California

CUTTER
Fine Biologicals and Pharmaceutical Specialties

Treatment of Infected War Wounds with a Nitrofuran

NEWTON C. McCULLOUGH, M.D.
Orlando, Florida

MANY battle wounds in the army general hospitals had the application of reconstructive surgical procedures delayed because of chronic infection. Systemic and local treatment with sulfadiazine, sulfanilamide and penicillin failed often to increase the rate of healing in these wounds. This situation led to a preliminary evaluation of a new chemotherapeutic agent for local application, 5-nitro-2-furaldehyde semicarbazone,* of the following structure:

The substance is a pure yellow, crystalline organic compound soluble 1:4200 in water and quite stable. For local application a vehicle consisting of Carbowaxes** and propylene glycol was used. These glycols are known to be safe when used topically,[1] and they form a water soluble ointment base in which 5-nitro-2-furaldehyde semicarbazone is dissolved in a concentration of 1:500.*** The melting point of this dressing is low, penetration good, and the preparation is removed readily by warm or cold water or saline. Maceration of the wound area is not observed with this base.

Dodd and Stillman[2] and Cramer and Dodd[3] described the bacteriostatic and bactericidal action of a variety of nitrofurans including 5-nitro-2-furaldehyde semicarbazone against both gram-negative and gram-positive organisms. Its lack of effect on the healing rate of experimental wounds was reported by Dodd, Hartmann and Ward[4] and the pharmacology was studied by Krantz and Evans.[5] Chemotherapeutic properties were demonstrated by Dodd[6] in the oral therapy of various systemic infections in mice.

Shipley[7] has given 5-nitro-2-furaldehyde semicarbazone orally to humans in doses of 2 grams daily for periods of several weeks with occasional nausea as the only untoward reaction. Due to low water solubility of this agent, and low concentration (1:500) in the vehicle, systemic absorption is probably small, even from a large wound.

Snyder, Kiehn and Christopherson[8] studied the 5-nitro-2-furaldehyde semicarbazone dressing in a small series of infected war wounds with favorable clinical and bacteriological results. Recently Meleney, Johnson, Pulaski and Colonna[9] stated that the drug was effective in vitro against certain gram-negative bacteria and that it did not appear to interfere with healing.

The present investigation is a preliminary study to indicate the effectiveness of the 5-nitro-2-furaldehyde semicarbazone dressing*** in the local treatment of chronically infected wounds.

Control

THE main factors responsible for a retarded rate of healing in such wounds can be considered to be chronic infection usually maintained by:

1. Presence of foreign bodies, such as devitalized bone or connective tissue, metal, cloth, leather, etc.
2. Ischemia as the result of scar tissue, or scar tissue and dependency.

All the wounds in this study were infected. With the exception of the four cases of impetigo, all were characterized by the presence of scar tissue. Many of them, including all the cases of osteomyelitis, contained foreign bodies such as sequestra. The wounds varied in age from 42 to 150 days and had reached a static condition in which no improvement had been observed for at least several weeks. The pyogenic barrier was generally well established and systemic evidences of sepsis other than an increased sedimentation rate and inanition were absent. No infected wounds were chosen in which surgical intervention would have been advisable thus the two factors, foreign body and ischemia, were held relatively constant. Normal activity was permitted the patients including two-day passes. Under these conditions, an indisputable increase in the rate of wound healing was regarded as an indication of the favorable effect of the antibacterial agent on the infection. This method, utilizing the wound itself as a control, might be regarded to be inferior to the comparison of a large series of treated and untreated infected wounds. It must be recognized however that the variations of size, origin, location, and tissues involved is so great in wounds that such an unselected series to be conclusive would require an impractical number of patients. In addition, all other treatment would have to be abandoned. This type of control would be impossible to maintain in a military hospital.

Treatment

DURATION of treatment varied from four to 54 days. The dressing was applied daily by means of a sterile tongue blade. The amount was not limited but, in general, 5 to 20 grams was used daily, depending upon the extent of the wound. Petrolatum-gauze was applied over the site to prevent absorption of the ointment by the bandage. Frequently the preparation was melted and injected into a sinus or abscess cavity, using a 14-gauge needle or a No. 12 soft rubber catheter.

Aerobic swab cultures of the wound were made every day. Complete blood counts, urinalyses and sedimentation rates were done prior to treatment and every five days thereafter. Color and black and white photographs were taken initially and then every third or seventh day. The odor, amount of drainage, size of wound, and appearance of granulation were noted daily in most of the cases.

Results of Treatment

OBSERVATION of the wounds showed that, in the wounds responding to treatment, the signs of an accelerated healing rate appeared within 24 to 48 hours. The odor diminished and then disappeared, the drainage decreased and changed from purulent to serous or serosanguineous in type. Granulation tissue improved in appearance. Growth of granulation tissue began to diminish the size of the wound during the first week of treatment. Simultaneously the advance of the epithelial border became evident.

The results are indicated in Table 1.

Among these cases, 12 wounds had been previously indolent with no change in size or amount of drainage for an average period of 50 days. These 12 wounds healed in an average of 21 days after starting treatment. The four cases of impetigo healed within six days. One had failed to respond to penicillin and another to sulfadiazine ointment and gentian violet.

Blood counts and urinalyses showed no abnormality indicating toxic effects from the drug. In general, the hemoglobin tended to rise while the white blood cells were unchanged in count and composition.

*5-nitro-2-furaldehyde semicarbazone has the trade name Furacin.
**Trade name for polyethylene glycols.
***Furacin Soluble Dressing.

Logically

. . . You'll want to eliminate outmoded technics and equipment with

POUR-O-VAC SEALS

the modern, reusable hermetic closure for sealing, storing, handling and conserving surgical fluids.

THESE FACTS ARE CONVINCING . . .

Pour-o-vac Seals eliminate the possibility of sterile water contamination caused by intake of bacteria-laden dust . . . avoids contamination by unfiltered air.

They serve a secondary function of providing a dustproof seal for remaining fluid when only the partial contents of a container are used. Of importance, they are interchangeable with all Fenwal 3000, 2000, 1000 and 500 ml. containers.

In permitting contents to be stored for long periods under vacuum . . . periodic testing for sterility without breaking the hermetic seal . . . pouring of contents from a non-drip sterile lip, Pour-o-vac seals eliminate the wasteful, time-consuming and questionably scientific method of sealing with gauze, cotton, paper, string and tape.

ALSO INVESTIGATE—Fenwal Automatic Washing Units, capable of accommodating and thoroughly cleansing 4 containers in 30 seconds.

HEADQUARTERS FOR SCIENTIFIC GLASS BLOWING, LABORATORY AND CLINICAL RESEARCH APPARATUS, REAGENT CHEMICALS

ORDER TODAY or write immediately for further information

Fenwal

MACALASTER BICKNELL COMPANY

243 Broadway Cambridge, Massachusetts

TABLE I.
RESULTS OF TREATMENT

Diagnosis	No. Cases	Healed Completely	Improved	No Change
Osteomyelitis*	37	10	18	9
Miscellaneous infected wounds	53	23	27	3
Impetigo associated with wounds	4	4	..	..
	94	37	45	12

*Denuded bone was palpable by probe or was visible.

Bacteriology

DRAMATIC evidence of removal or alteration of the flora was not obtained. This is a familiar situation and has led Meleney and Whipple to the conclusion expressed in their review of sulfonamide treatment of wounds,[10] namely that clinical evidence is more decisive than evidence based on the finding of bacteria.

From 597 cultures obtained preceding and during treatment of 35 cases, the following findings appear worthy of note:

1. Staphylococcus aureus and Streptococcus pyogenes usually disappear.

2. Gram-negative organisms persist longer than gram-positive ones, even in the face of clinical improvement.

3. Out of 597 cultures, 97 showed no growth after starting treatment.

4. Pseudomonas aeruginosa and diphtheroids were not found.

It is of interest that the green stain of Pseudomonas aeruginosa noted previously with locally applied penicillin was not observed with topical nitrofuran treatment. The presence of Staphylococcus aureus and Streptococcus pyogenes was sporadic. This could be the result of either contamination of the wound or incomplete antibacterial action.

Sensitization

OUT of 94 cases, four patients developed a local vesicular eruption with erythema in the immediate area. This condition cleared up promptly within one week upon cessation of nitrofuran treatment. All four of these patients responded positively to patch tests with the nitrofuran preparation. No systemic effects were noted.

One other patient developed a dermatitis about the edges of the wound after daily treatment for 40 days. Patch tests with drug and vehicle were negative.

Conclusions

A TOTAL of 94 chronically infected wounds was treated locally with 5-nitro-2-furaldehyde semicarbazone dressing.*** Of these 37 healed, 45 improved and 12 were unchanged. Of the 94 wounds, 37 cases of osteomyelitis showed 10 healed, 18 improved, and nine were unchanged.

2. Bacteriologic studies were not conclusive.

3. This preparation is of value in the local treatment of infected wounds.

4. No evidences of toxicity were observed.

TABLE II.
NUMERICAL APPEARANCE OF FLORA IN TOTAL OF 597 CULTURES UNDER FURACIN TREATMENT

GRAM-POSITIVE		GRAM-NEGATIVE	
Staphylococcus aureus	53	Escherichia coli	64
Streptococcus pyogenes	89	Proteus vulgaris	154
Staphylococcus albus	172	Aerobacter aerogenes	86
Streptococcus salivarius	2	Pseudomonas aeruginosa	0
Diplococcus pneumoniae	0		
Klebsiella pneumoniae	0	Total	304
Staphylococcus citreus	146		
Total	462		

5. Four instances of sensitivity developed in 94 patients as evidenced by local dermatitis and positive patch tests. No systemic effects were noted.

[This study was carried out under the authority of and through the courtesy of COLONEL A. J. CANNING, Commanding Officer of Rhoads General Hospital, Utica, New York. Gratitude is extended to MAJOR A. J. CORBETT and LT. FRANK KAMPLAIN for their cooperation in laboratory studies and CAPTAIN C. E. NOONAN for his clinical observations and supervision.]

Bibliography

1. HANZLIK, P. J., and others: Toxicity, fats and excretion of propylene glycol and some other glycols. *J. Pharmacol. & Exper. Therap.*, 67:101 (Sept.) 1939. SMYTH, H. F., JR., CARPENTER, C. P., and SHAFFER, C. B.: Subacute toxicity and irritation of polyethylene glycols of approximate molecular weights of 200, 300, and 400. *J. Am. Pharm. A.* (Scient. Ed.), 34:172 (June) 1945. SMYTH, H. F., JR., and others: Some Pharmacological properties of polyethylene glycols of high molecular weight ("Carbowax" compounds). *J. Indust. Hyg. & Toxicol.*, 24: 281 (Nov.) 1942.

2. DODD, M. C., and STILLMAN, W. B.: The In Vitro Bacteriostatic Action of Some Simple Furan Derivatives. *J. Pharmacol. & Exper. Therap.*, 82:11 (Sept.) 1944.

3. CRAMER, D. L., and DODD, M. C.: The Mode of Action of Nitrofuran Compounds. 1. Action versus S. aureus. *J. Bact.*, 51:293 (March) 1946.

4. DODD, M. C., HARTMANN, F. W., and WARD, W. C.: The Local Application of Nitrofuran Compounds with Special Reference to Use on Wounds. *Surg., Gynec. & Obst.*, 83:73 (July) 1946.

5. KRANTZ, J. C., and EVANS, W. E.: A Contribution to the Pharmacology of 5-Nitro-2-furaldehyde Semicarbazone. *J. Pharmacol. & Exper. Therap.*, 85:324 (Dec.) 1945.

6. DODD, M. C.: Chemotherapeutic Properties 5-Nitro-2-furaldehyde Semicarbazone (Furacin). *J. Pharmacol. & Exper. Therap.*, 86:311 (April) 1946.

7. SHIPLEY, E. R.: Personal Communication.

8. SNYDER, M. L., KIEHN, C. L., and CHRISTOPHERSON, J. W.: Effectiveness of a Nitrofuran in the Treatment of Infected Wounds. I. Preliminary Report. *Mil. Surgeon*, 97:380 (Nov.) 1945.

9. MELENEY, F. L., JOHNSON, B. A., PULASKI, E. J., COLONNA, F.: Treatment of Mixed Infections with Penicillin. *JA.M.A.*, 130-121 (Jan. 19) 1946.

10. MELENEY, F. L., and WHIPPLE, A. O.: Statistical Analysis of Study of Prevention of Infection in Soft Part Wounds, Compound Fractures, and Burns with Special Reference to Sulfonamides. *Surg., Gynec. & Obst.*, 80:263 (March) 1945.

The Diagnosis and Treatment of Spinal Cord Injuries

JOHN MARTIN, M.D.,
Chicago

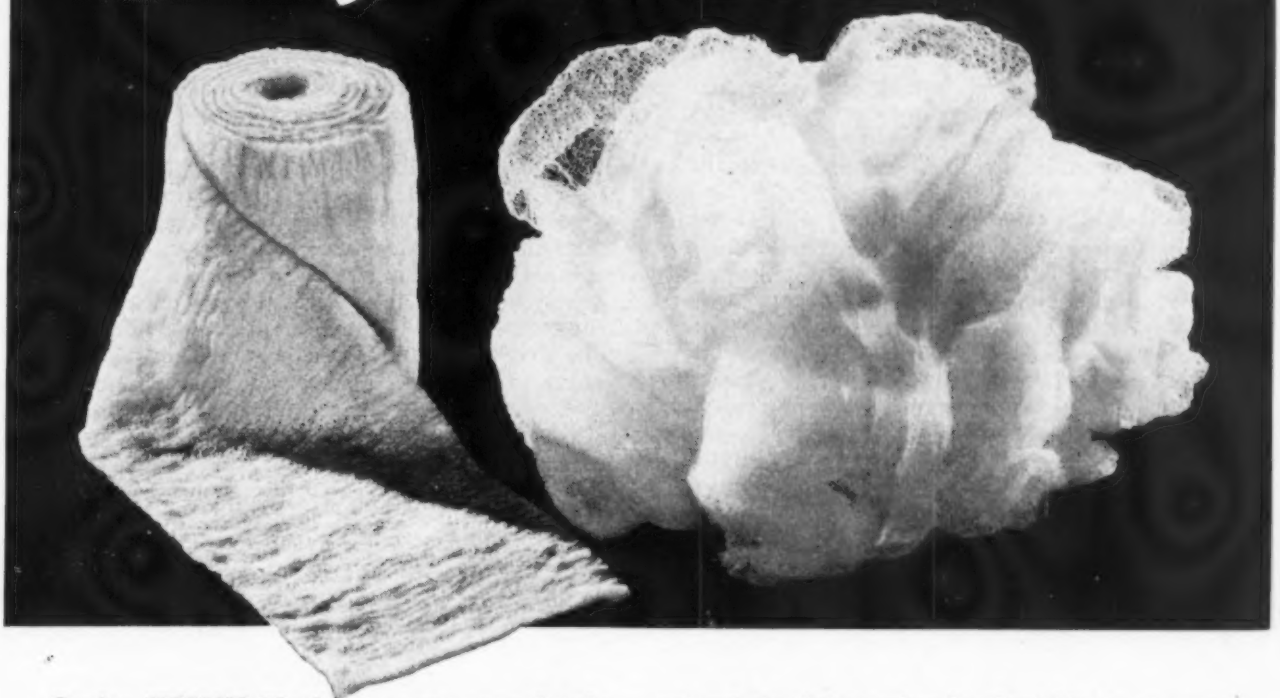
MOST injuries of the spinal cord in civilian life are of the closed type, without open wounds of the soft tissues, and the majority are accompanied by fracture-dislocation of the vertebrae at the point of injury. It is of paramount importance that the exact cord segment of injury be determined, and that an accurate estimate of the bone damage be made as early as possible. To accomplish these two matters a complete neurological examination must be made, and recorded, and properly planned roentgenographic studies undertaken. Obviously, any necessary emergency measures must be undertaken to combat shock, to stop hemorrhage if that has occurred, or to care for serious open wounds if they should be present. From the very moment of injury it is of utmost importance that the patient be handled with unceasing caution, and the simplest and safest way to accomplish that is to place the patient on his back on a rigid portable surface when the injury is cervical, low thoracic, or lumbar, with the head in moderate hyperextension, and with a folded towel or blanket under both the cervical and lumbar spine. If the injury is in the upper or mid-thoracic spine, the patient should be transported in the prone position. If the injury is in the cervical region, the head must be supported on either side by firm objects such as sand bags.

Read before the meeting of the AMERICAN ASSOCIATION OF RAILWAY SURGEONS, Chicago, October 31, 1946.

NEW—REVOLUTIONARY—EXCLUSIVE

Curity KERLIX* ROLLS

REG. U.S. PAT. OFF.



Curity KERLIX Cloth is a new, completely different surgical dressings material with a *permanent crinkle.* The deep crepe-like characteristics impart *softness, fluffiness* and *resiliency* not found in other surgical dressings materials. KERLIX Cloth is also conformable to anatomic contours because of its mild but pronounced *elasticity.*

WIDE RANGE OF USES

These novel characteristics adapt KERLIX Rolls to the following uses, to name only a few:

▶ All dressings of the extremities: head rolls; elbow and knee dressings; stump rolls. Kerlix's natural elasticity makes it adaptable to uneven contours, keeps it in place.

▶ As a padding under an elastic bandage in compression dressings, because of light bulk and resiliency, Kerlix Rolls can be applied evenly, avoiding pressure spots.

▶ Postoperative fluffs and similar dressings in which extra softness, greater absorbency and conformability are necessary. Kerlix Rolls have all these qualities.

Curity KERLIX Rolls are 6-ply, approximately 4½ in. x 4½ yds. stretched, packed 100 to the carton. Ask for Curity KERLIX Rolls —you'll like their efficient performance.

* Reg. U. S. Pat. Off.

A product of

BAUER & BLACK

Division of The Kendall Company, Chicago 16

RESEARCH TO IMPROVE TECHNIC...TO REDUCE COST

Curity

Until definitive care can be given, nothing should be administered by mouth unless the interval is an extended one. If the patient can not urinate, a catheter should be placed in the bladder under sterile precautions and left there, draining continuously. The patient may have radicular pains originating at the level of the lesion, and only if they are severe should drugs be administered to stop the pain. Here again caution must be used, since many drugs will mask neurological symptoms, and certainly morphine should not be administered. Morphine is definitely dangerous in the presence of cervical cord injury, and it may encourage the ileus which frequently accompanies spinal cord injuries.

When the patient has reached the proper surroundings for examination and care, he should be examined neurologically. The level of the lesion in the cord is very easily determined, since there is usually an acute loss of response to sensory stimuli at the involved segment. There will also be a corresponding weakness or complete paralysis of the muscles below the level of injury, usually including the motor function of the bladder with retention of urine. All deep tendon and superficial skin reflexes are lost below the level of a serious lesion. When the roentgenograms are made, they should be taken on a regular table and not by portable if that is at all feasible. Carefully made lateral views, and stereoscopic antero-posterior views should always be taken. With the best of films it is frequently difficult to determine the extent of the injury to the elements of the posterior vertebral arches, and for that reason clear stereoscopic films are a necessity. While the patient is on the x-ray table a diagnostic lumbar puncture can be done. There will frequently be a complete or partial block on manometric testing with the Queckenstedt test, and the result of this test is frequently in keeping with the injury to the vertebrae. There will be those patients with complete block who show little or no roentgenographic cause for it, and this may be due to edema of the cord at the site of injury, especially if the injury is several hours old at the time of the lumbar puncture.

Obviously, any injury above the first lumbar vertebra will produce an upper motor neuron lesion, while those below will produce a lower motor neuron lesion, the classical evidence of either type appearing after varying periods of time. But in the early phase of the injury there is no rule by which a complete or incomp'ete, or an anatomical or physiological lesion, can be differentiated. A complete physiological lesion may be present for several hours or days, only to subside with recovery, and early it can not be differentiated from a transection of the cord. To depend for diagnosis upon the nature of the reflexes is a very uncertain procedure.

The treatment of spinal cord injuries must be instituted early. If there is simple fracture, or fracture-dislocation to be reduced by the closed method, or if there is no roentgenographic evidence of severe bone injury, then the proper steps for reduction and immobilization are taken, and this usually means fixation in hyperextension. When there is evidence of severe cord injury, when there is obvious injury to the posterior arches, and when these two factors are accompanied by a block of the cerebrospinal fluid, one is usually dealing with the patient who requires operation unless the injury be a cervical fracture-dislocation.

In the great majority of cases, the patient with a fracture-dislocation of the cervical spine is in no condition for any such operation as laminectomy, and it should rarely if ever be done in the early stage of injury, and certainly not without having tried more conservative methods of treatment first. Without cord injury or with it, the manual method of reduction, such as the Taylor method, is fraught with great danger of adding injury to the cord, even though the procedure is done without anesthetic and with the constant guidance of roentgenograms. The safest and most effective means of treating a fracture-dislocation is the application of skeletal traction with the aid of the Crutchfield tongs. The entire head is shaved and prepared as for a surgical operation, but without any movement of the head or neck. A small wheal of novocaine, a tiny stab wound, a small drill point into the outer table, and the tongs can be applied in less than 10 minutes without any discomfort or danger to the patient. Put immediately into the proper bed with the head elevated on blocks and a board under the mattress, fifteen to eighteen pounds are hung upon the tongs and the patient will be immediately relieved of his girdle pains. Beside films may be taken from time to time, and in many instances reduction will have occurred within a few hours. During all the time the tongs are in place the head is kept in moderate hyperextension with a support under the neck, and when the patient is turned for back care, the head, neck and trunk are turned as one in a fixed position. From time to time, also, lumbar puncture may be done to determine the effect of the traction on the block which usually is present in such injuries. Traction should be maintained for six weeks in most cases, following which a properly fitting, adjustable neck brace is applied and worn for another four to six months. Laminectomy for cervical cord injuries is usually restricted to those patients whose fracture dislocation was not adequately handled by traction, and who later remain blocked due to an overgrowth of callus, arachnoidal adhesions, or depressed bone fragments.

When the thoracic cord is injured, the patient should be placed in a cast in as much hyperextension as possible only if there is no injury to any of the posterior arches. But to put a pad over the site of injury and then put the patient up in a tight cast in hyperextension may be the cause of additional injury to the cord, since by so doing loosened bone fragments may be forced against the already softened, damaged cord. It is always much safer to err on the side of operation, to perform a laminectomy under local anesthesia, and remove any loose bone fragments and to control any hemorrhage from the surrounding muscles or ligaments, than to treat such an injury by the closed method alone. Following such a laminectomy, the patient can be safely placed in a well padded cast, changed from time to time to gain more hyperextension in an attempt to realign the bodies of the vertebrae, and thus be assured that no further injury to the cord will result. If the dura is not torn, it is usually best not to open it after the operator is sure all loose spicules of bone are out, for the soft cord may herniate through the dural opening and thus produce additional injury. Contrary to general assumption, by such means the bodies of thoracic vertebrae do on some occasions come back into position, but it is true that fracture-dislocations of the thoracic spine usually produce severe cord injuries, since the entire thoracic spine has no power of stretch or bend, and the canal is quite narrow.

In injuries of the cauda equina together with fracture dislocation, the same general problem presents as does in the case of thoracic injuries, except that the neurological signs will be mixed, may show early

B R E C K

Hand Preparations

Breck Water Resistant Cream forms a uniform film on the hands that is resistant to water and water solubles. 8 oz. jar $6.00 dozen; 1 lb. jar $10.20 dozen.

Breck pH7 Protective Cream protects hands from dirt, grease, oil, paint, printer's ink, etc. 8 oz. jar $5.40 dozen; 1 lb. jar $8.40 dozen.

Breck Work Cream helps prevent the dryness which may cause skin irritations. 8 oz. jar $4.80 dozen; 1 lb. jar $9.00 dozen. Plus 20% tax.

Breck Hand Cleaner is a mild, bland, non-irritating hand cleaner for cleaning up after work. 8 oz. bottle $6.00 dozen; 16 oz. bottle $10.00 dozen; 1 gallon $3.50.

The hands that worked to protect us during the war deserve protection now. The men and women who are back in industry after serving in the armed forces may need advice on proper hand care. Physicians may want to recommend the Breck Hand Preparations which were found helpful for protecting and cleaning the hands during the war.

JOHN H BRECK INC · MANUFACTURING CHEMISTS · SPRINGFIELD 3 MASSACHUSETTS
CANADIAN ADDRESS · 47 CLARENCE STREET · OTTAWA

change, and eventually prove to be of the peripheral nerve type. There is less commonly, though commonly enough, injury of a severe nature to the posterior arches, but fracture and dislocation of the bodies are very common. The same general principles of determining the use of closed plaster treatment, or laminectomy with or without plaster fixation, applies in these injuries as they do in those of the thoracic cord.

The early surgical care of a patient with a spinal cord injury is, indeed, only the beginning, since these patients are primarily and forever after, unless recovery occurs, problems of nursing care. They must be in a bed of the proper type. The ideal bed is one with a sponge rubber mattress on a solid board, with the head of the bed elevated on blocks. All bedding must be kept scrupulously clean, sheets must not be wrinkled under the patient, and bed clothes must be kept off the paralyzed extremities by means of a cradle. Heating pads and hot water bottles are taboo at all times in every case. If external heat must be used, it can be supplied by electric light bulbs under the cradle. The patient must be turned at least every two hours, and the skin which bore the pressure must be massaged, dried, and powdered. It is by all means much easier to prevent bed sores than to cure them, and the appearance of a bed sore in a patient with a spinal cord injury unequivocally spells deficient nursing care and in-attention to small but important details. Just as soon as is feasible the patient should be allowed to sit up, get out of bed, or get out of his room on a cart, for this is probably the single most important step in keeping up the morale of a paralyzed patient. Needless to say, such patients require careful attention to nutrition. By no means should they be made drug addicts by their doctors. The bowels usually eventually become incontinent and evacuate at more or less regular intervals. Enemas should not be given in the early phase of the injury, but they may be safely used after the first 10 days or two weeks. Physical therapy can be started almost the day of the injury; at any rate, it should be started early. Frequent massage of the extremities and trunk, passive exercise, or carefully directed active exercise done when that is possible is of great aid in keeping the skin, muscles and joints in proper condition. In the spastic patient deep massage or electrical stimulation should not be employed, but they may be used with benefit in those injuries involving the cauda equina where the paralysis is of the flaccid type.

Lastly, unflagging optimism in the presence of the patient on the part of all attending personnel is a rule which must never be disobeyed.

THIRTY-SECOND ANNUAL MEETING

American Association of Industrial Physicians and Surgeons combined with American Association of Industrial Nurses, Inc., American Industrial Hygiene Association, American Conference of Government Industrial Hygienists, American Association of Industrial Dentists

Hotel Statler, April 29 to May 2, 1947, Buffalo, New York

Tentative Program

American Conference Governmental Industrial Hygienists

Saturday, April 26

STANDING committee meetings. Each committee chairman to have meeting in his hotel room.

Sunday, April 27

ROUND-TABLE discussions.

Chemists — Morning only — Georgian Room.

Engineers — Afternoon only — Georgian Room.

Physicians—All day—Parlor E.

Nurses—All day—Parlor E.

Monday, April 28

INDUSTRIAL Hygiene for All the Workers"—J. J. BLOOMFIELD, U. S. Public Health Service.

"Control of Respiratory Diseases in Industry"—DR. ANN BAETJER, Johns Hopkins University.

"Role of Codes in Industrial Hygiene Administration"—THEODORE WATERS, Chairman, Legal Committee, Industrial Hygiene Foundation.

Thirty-minute discussion of MR. WATER'S paper.

"Administrative Problems of the Industrial Consultant Nurse"—GLADYS A. JAHNCKE, Washington Department of Health.

Symposium on New Problems and Developments in Industrial Hygiene. Each paper limited to 10 minutes. Discussion limited to 10 minutes.

"D.D.T. Coating of Wall-Paper"—K. E. MORSE, Illinois Department of Health.

"Use of Plastic Chips in Chrome Plating"—R. M. BROWN, Industrial Hygiene Section, City of St. Louis.

"Mercury Hazard in Treating Seed Corn"—H. F. SCHULTE, Kansas City Area Industrial Hygiene Service.

"Sodium Fluoride in the Steel Industry"—DR. K. E. MARKUSON, Michigan Department of Health.

"Toxicology of 2-nitropropane"—JOHN B. SKINNER, Massachusetts Department of Labor and Industries.

"New Industrial Hygiene Program in Texas"—MARTIN C. WUTASCH, Texas State Board of Health.

Scientific Exhibits Invited

Scientific Exhibits illustrating Phases of Industrial Health Methods, Treatment, Research will be welcome at Buffalo April 29 to May 2, 1947

Communicate with Dr. Fred W. Slobe, chairman, Scientific Exhibit Committee, 2024 S. Western Ave., Chicago.

Tuesday, April 29

COMMITTEE Reports: "Committee on Recruitment and Tracing of Industrial Hygiene Personnel"—DR. L. W. FARNER, Chairman, Washington Department of Health.

"Committee on Industrial Hygiene Codes"—C. D. YAFFE, Chairman, New York Department of Health.

"Committee on Industrial Ventilation"—W. B. HARRIS, Chairman, New York Department of Labor.

"Committee on Professional Qualifications of Industrial Hygiene Personnel"—R. T. PAGE, Chairman, U. S. Public Health Service.

"Committee on Constitution Review"—DR. L. GREENBURGH, Chairman, New York Department of Labor.

"Committee on Appraisal and Reporting of Industrial Hygiene Activities"—MISS VICTORIA TRASKO, Chairman, U. S. Public Health Service.

"Committe on Worker Health Information"—H. G. DYKTOR, Chairman, Cleveland Division of Health.

"Committee on Standard Methods"—DR. F. H. GOLDMAN, Chairman, U. S. Public Health Service.

"Committee on Threshold Limits"—DR. L. T. FAIRHALL, Chairman, U. S. Public Health Service.

American Industrial Hygiene Association Preliminary Program

Tuesday, April 29

TOXICOLOGY: "Fundamental Consideration in Toxicological Research"—W. F. MACHLE.

"Tracer Chemistry in Toxicological Research"—J. H. STERNER.

"Further Experience with Range Finding Tests in Industrial Toxicology"—H. F. SMYTH, JR., and C. P. CARPENTER.

"Skin Absorption"—J. H. DRAIZE.

Other subjects and speakers to be announced.

Meeting—Board of Directors of Association.

Wednesday, April 30

JOINT MEETING: Environmental Control.

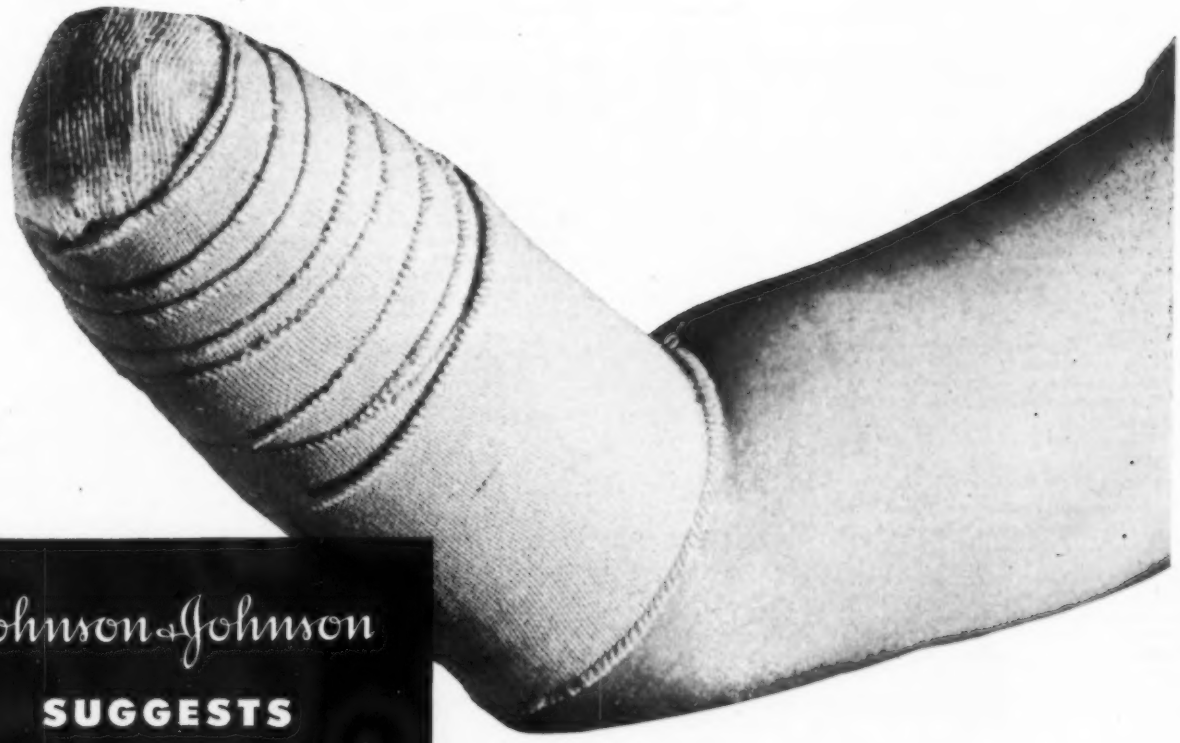
"Cummings Memorial Lectures"—W. P. YANT.

"Hazards in Mercury Battery Manufacture"—C. R. WILLIAMS.

"Fume and Dust Exposure in Brass Foundries"—W. W. STALKER.

"Ventilation of Cotton Textile Mills"—L. SILVERMAN.

"Control of Lead in Brass Foundries"—L. E. HAMLIN and H. J. WEBER.



Johnson & Johnson

SUGGESTS

ADAPTIC

for pressure dressings

Among the medical contributions of the war was the use of pressure bandaging as part of the modern therapy for amputations and burns. One of the most important features of this type of treatment is sustained, evenly distributed physiologic pressure.

This pressure may readily be obtained through the use of ADAPTIC Elastic Bandages. These provide firm, even elastic compression without danger of circulatory embarrassment, since the gentle tension of the bandages makes them readily adaptable to changing physiologic needs.

Doctors have found many uses for ADAPTIC —the Johnson & Johnson Elastic Bandage . . . for strains, sprains, varicose veins, radical mastectomy and other applications.

ADAPTIC is made of fine, long-staple cotton which stretches without narrowing when wound. Provides a smooth, close-conforming supporting bandage. This makes it easy for patients to carry out the simpler home applications—saving you unnecessary calls. As the ADAPTIC can be laundered and reused many times, its over-all cost is comparatively low. Available in 2", 2½", 3" and 4" widths.

ADAPTIC—the Johnson & Johnson ELASTIC BANDAGE

Association Dinner—Conferences.

"Atmospheric Trade Wastes" — PHILIP DRINKER.

"Toxicology"—D. D. IRISH, Chairman.

"Engineering"—W. N. WITHERIDGE, Chairman.

"Analytical Procedures"—W. G. FREDERICK, Chairman.

Thursday, May 1

SYMPOSIUM on Particle Size: "Toxicity of Uranium in Relation to Particle Size"—HAROLD HODGE.

"Influence of Particle Size in Dust Exposure"—T. F. HATCH and W. C. L. HEMEON.

Other subjects and speakers to be announced.

Business meeting of Association.

Analytical Procedures:

"Behavior of Absorbing Devices"—H. B. ELKINS.

"Review of Automatic Indicating and Recording Instruments"—W. L. COOK.

"Interferometry"—to be announced.

"Infra-red Absorption Analysis"—W. G. FASTIE.

"X-ray Diffraction Analysis of Dusts"—H. P. KLUG.

American Association of Industrial Physicians and Surgeons Preliminary Program

CLINIC—Buffalo City Hospital (Meyer Memorial). Fracture and Traumatic Clinic: Chairmen—GEORGE MARCY, JR., M.D.; JOHN STEWART, M.D., Professor of Surgery, University of Buffalo Medical School and Associates.

CLINIC—Buffalo General Hospital. Symposium on Back Problems:

Chairmen—W. WARD PLUMMER, M.D., Professor Emeritus of Orthopedic Surgery; DR. WALLACE B. HAMBY, Professor of Neurosurgery; DR. FRANK N. POTTS, Professor of Orthopedic Surgery; DR. BURTON SHINNERS, Neurologist; DR. L. MAXWELL LOCKE, Internist—All of the faculty of University of Buffalo School of Medicine.

Wednesday, April 30, Morning Session

CALL to order—HENRY S. BROWN, M.D., General Convention Chairman.

Five-minute addresses by Presidents of Groups meeting in Convention:

PRESIDENT KENNETH M. MORSE, American Conference Governmental Industrial Hygienists.

PRESIDENT FRANK PATTY, American Industrial Hygiene Association.

PRESIDENT JAMES M. DUNNING, D.D.S., American Association of Industrial Dentists.

PRESIDENT CATHERINE DEMPSEY, American Association of Industrial Nurses.

PRESIDENT LOYAL A. SHOUDY, M.D., American Association of Industrial Physicians and Surgeons.

HAZARDS Incident to the Use of the Atomic Bomb—(The work of COL. STAFFORD L. WARREN and Associates.)

"The Physiological Aspect"—DR. FRED A. BRYAN.

"The Physical Aspect"—ROBERT J. BUETTNER.

The Bikini Experiment:

DR. CHRISTOPHER LEGGO, Crockett, California, Medical Director, California & Hawaiian Sugar Company (Witness of over-water blast).

DR. JAMES H. STERNER, Rochester, New York, Laboratory of Industrial Medicine, Eastman Kodak Company (Witness of underwater blast).

Moving pictures of both incidents.

Wednesday, April 30, Afternoon Session

CHAIRMAN—DR. ROBERT GRAHAM, President-Elect, Central States Society of Industrial Medicine and Surgery.

"The anatomy of Knee Injuries"—DR. ALLEN F. VOSHELL, Baltimore, Maryland.

"Refrigeration for the Preservation of Traumatic Tissue"—DR. LYMAN WEEKS CROSSMAN, New York City.

"Use of Penicillin in Tendon Sheath Infections"—DR. J. HAROLD COUCH, Faculty of Medicine, University of Toronto.

"Method for Control of Lead Hazard not Generally Used"—DR. L. E. HAMLIN, American Brake Shoe Foundry, Chicago.

Wednesday, April 30, Evening Session

CHAIRMAN—DR. O. A. SANDER, Milwaukee, Wisconsin.

"Practical Experience with Dangers and Illnesses from Plastics on Degreasing Agents"—DR. A. GIRARD CRANCH, Union Carbide & Carbon Corporation, New York City. Discussion by HARLEY J. KREIGER, M.D., Medical Director, Ford Mortor Company; Professor Talbot, University of Buffalo.

Panel Discussion: "New Preventive Measures in Industry"—WILLIAM A. SAWYER, M.D., Medical Director, Eastman Kodak Company; CLARENCE D. SELBY, M.D., Medical Director, General Motors Corporation; MELVILLE H. MANSON, M.D., Medical Director, American Telephone and Telegraph Company; MELVIN N. NEWQUIST, M.D., Medical Director, The Texas Company; A. G. KAMMER, M.D., Medical Director, Schenley Corporation.

Thursday, May 1, Morning Session

CHAIRMAN—DR. CARL M. PETERSON, Secretary, Council on Industrial Health, A.M.A.

"Report of Six-year Survey of Cardiovascular Studies on Executives and Supervisors"—LEMUEL C. MCGEE, M.D., Medical Director, Hercules Powder Company, Wilmington, Delaware.

"Growth of an Industrial Dental Program in a Pittsburgh Industry"—C. R. FRICKE, D.D.S., Etna, Pennsylvania.

Moving picture—"Care of the Feet"—Courtesy Surgeon-General, U. S. Navy.

"Shoulder Injuries"—HARRISON MCLAUGHLIN, M.D., New York City.

Discussion—DR. JOS. DZIOB, Bethlehem Steel Company, Lackawanna, New York.

"Progress in Teaching of Industrial Medicine in American Medical Schools"—MILTON H. KRONENBERG, M.D., Caterpillar Tractor Company, Peoria, Illinois.

Discussion—DR. R. F. BUCHAN, Institute of Occupational Medicine, Yale University; DR. T. LYLE HAZLETT, Pittsburgh University School of Medicine.

Thursday, May 1, Afternoon Session

CHAIRMAN—ALFRED H. WHITTAKER, M.D., Detroit.

Panel discussion on Surgical Subjects to be announced. Conducted by DR. HENRY MARBLE, Boston.

Annual Business Meeting of the American Association of Industrial Physicians and Surgeons.

Report of Board of Directors—FREDERICK W. SLOBE, M.D., Secretary.

Report of Treasurer.

Report of Managing Director.

General Business Session.

Election of Officers and Directors.

Annual Banquet of the American Association of Industrial Physicians and Surgeons.

Presentation of Knudsen Award.

Address by prominent speaker (to be announced).

American Association of Industrial Dentists Preliminary Program

Wednesday, April 30

MEETING of Board of Directors. Luncheon, to be arranged. Meeting of the Association—Business.

Thursday, May 1

FIELD trip directed by DR. E. J. GUILLAUME, E. I. duPont deNemours Company.

Luncheon, to be arranged. Meeting of the Association.

"Conservative Procedures in the Treatment of Acute Dental Injuries in Industry"—DR. L. S. MORVAY, Newark, New Jersey.

"Ways in which a State Health Department can Assist with Dental Health in Industry"—DR. C. L. SEBELIUS, Nashville, Tennessee.

"The Administration of a Dental Clinic in the Glass Industry"—DR. J. E. DECAMP, Corning, New York.

"Dental Relations in a State Industrial Hygiene Program"—DR. E. R. ASTON, Harrisburg, Pennsylvania.

The American Association of Industrial Nurses, Inc. Preliminary Program

Thursday, May 1

PRESIDING—MARGARET LUCAL, R.N., Ohio Rubber Company, Willoughby, Ohio.

Meeting of Presidents or Representatives of all local and area groups.

PRESIDING—KATHLEEN M. DUFFY, R.N., American Manufacturing Company, Brooklyn, New York.

Meeting of Chairmen of Membership Committees.

PRESIDING—MARGARET SINNOTT, R.N., B.S., Metropolitan Life Insurance Company, New York City.

Meeting of all local Education Committees.

Banquet of American Association of Industrial Physicians and Surgeons.

Friday, May 2

JOINT meeting of the American Association of Industrial Physicians and Surgeons, and American Association of Industrial Nurses. PRESIDING—ALMA ANDERSON, R.N., Griggs Cooper & Company, St. Paul, Minnesota.

Panel Discussion—"In Service Education of the Nurse in Industry." Speaker—DR. J. J. WITTMER, Consolidated Edison Company, New York City—"Medical Director's Responsibility."

"Management's Interest"—To be announced.

"The Nurse's Needs"—MRS. ISABEL COMSTOCK, R.N., Boeing Aircraft, Seattle.

Discussion Leader—MRS. MARY E. DELEHANTY, R.N., Equitable Life Assurance Society, New York City.

PRESIDING—ETHEL BURGESON, R.N., Sears Roebuck Company, Chicago.

Six Nursing Papers, followed by 10 minutes discussion after each:

"Nursing Care of Arc Flash Burns of the Eye"—MILDRED SMITH, R.N., Buffalo, New York.

"Nurses' Opportunities for a Health and Safety Education Program" — MARGARET CURRIE, R.N., Pacelot Manufacturing Company, Gainesville, Georgia.

(To be announced)—CHRISTINE SINKULA, R.N., National Steel Company, Weirton, West Virginia.

"Education—An Indication of Growth"—MRS. DOROTHY BERRY, R.N., Cleveland, Ohio.

(To be announced)—a Canadian Nurse.

"Effect of Industrial Work on the Health of Adolescents"—D. A. PEMBROKE, R.N., Boots Pure Drug Company, Nottingham, England.

AMERICAN Association of Industrial Nurses Banquet. PRESIDING—CATHERINE R. DEMPSEY, R.N., President, A.A.I.N.

Invocation by REV. GEORGE F. O'PRAY, Rector of St. George's Episcopal Church, Buffalo, New York.

Toastmaster—HENRY S. BROWN, M.D., President, American Association of Industrial Physicians & Surgeons, and Medical Director, Michigan Bell Telephone Company, Detroit.

Saturday, May 3

GENERAL Business Session. PRESIDING—CATHERINE R. DEMPSEY, R.N., President, A.A.I.N.

Luncheon. PRESIDING—MRS. IRMA PREUSSER, R.N., Trico Products Company, Buffalo, New York.

INVOCATION by RT. REV. MSGR. SYLVESTER HOLBOL, Superintendent of Parochial Schools, Buffalo, New York.

Speaker—(To be announced).

General Meeting. PRESIDING — CHRISTINE SINKULA, R.N., National Steel Company, Weirton, West Vriginia.

"Structure Study"—DR. WILLIAM CHERIN, Raymond Rich Associates.

Sunday, May 4

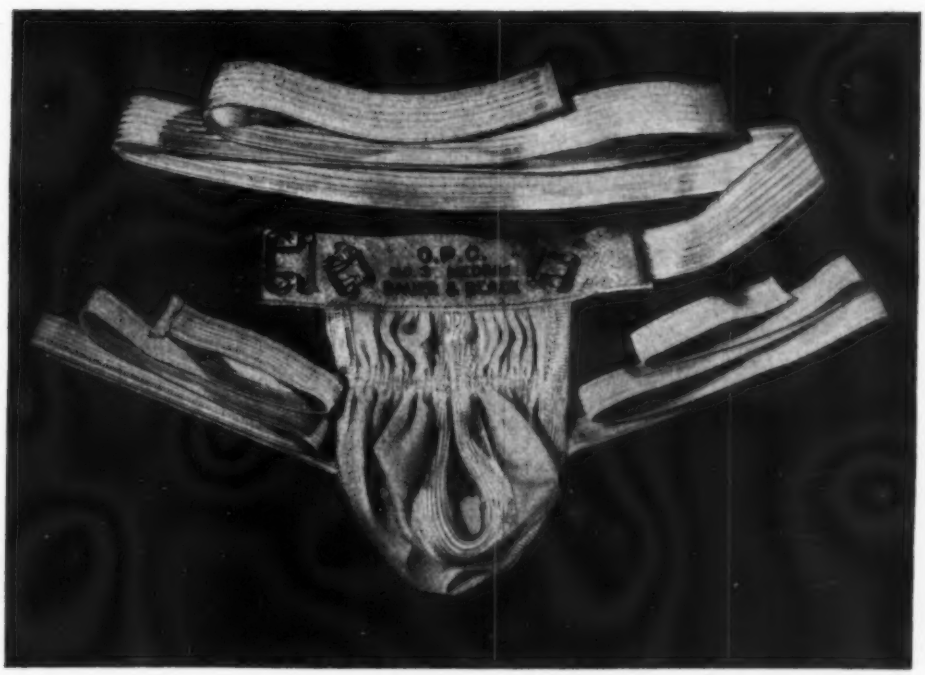
BREAKFAST Meeting. PRESIDING — MRS. FRANCES B. FEILE, R.N., A. B. Dick Company, Chicago, and 2nd Vice President of A.N.A. Section, Chicago.

Invocation by DR. JOSEPH FINK, Temple Beth Zion, Buffalo, New York.

Panel Discussion: "Collective Bargaining Aspects of an Economic Security Program"—Speakers RUTH HALL, R.N., Director, A.N.A., Buffalo, New York; DONALD SMITH, A.N.A. Legal Advisor; third speaker to be announced.

Your patients will like—

BAUER & BLACK O.P.C.* NO. 3



Just a quick look at Bauer & Black O.P.C. No. 3 Suspensory will show you why so many doctors prescribe it to patients. For every detail of this fine suspensory—from excellent materials to careful sewing—reflects quality. Most important, O.P.C. is tailored for comfort, so patients *will wear it.* Yet the cost is low to meet your patients' budgets. That's why we say "O. P. C.—your patients' best buy."

O.P.C. Suspensories are available at all drug and surgical supply stores. Ask to see one soon!

FEATURES:

SEAMLESS POUCH, elastic knit for therapeutic support, greater comfort. Elastic around opening is an additional comfort feature that patients appreciate.

FULL RETENTION of scrotum, through properly placed leg bands, regardless of patient's position. An important advantage for patients in *active* work.

WAISTBAND—long stretch elastic permits removal of suspensory without unbuckling. Assures better fit without bulky padding.

SCIENTIFIC DESIGN—to fulfill the aims of therapy. Finer tailoring and materials.

FIRST IN Elastic SUPPORTS

BAUER & BLACK

*Reg. U. S. Pat Off.

Division of The Kendall Company
2500 S. Dearborn St., Chicago 16

INDUSTRIAL HEALTH and DISEASE

Time and Cost Standards Set in Hygiene Experiment

IS EFFECTIVE health supervision for New York's industrial population feasible? Can it be extended to small plants? Would costs be reasonable?

These questions, for many years under consideration by the State's industrial hygiene experts, have at last been answered—in the affirmative.

This much-needed information was made available through a carefully controlled experiment conducted during the first 10 months of 1945 by the wartime Office of Industrial Health in seven Long Island City plants of various sizes. Requirements for adequate industrial health service in small plants and exact costs of such programs were determined.

OFFICE of Industrial Health — In July, 1943, the State Labor Department's Division of Industrial Hygiene and Safety Standards and the New York City Department of Health, working in cooperation with the U. S. Public Health Service, established an Industrial Health Unit in New York City. This unit, staffed by a physician, nurse, engineer, chemist and secretary, aimed at improvement of worker health through control of environmental hazards and individual health problems. Its name was later changed to the "Office of Industrial Health."

Concentrating on one industrial section of the metropolitan area, Long Island City, the Office surveyed a number of plants to determine their health needs. It found that environmental health hazards could be adequately controlled through the consultation services of its physician, engineer and chemist. Individual health problems could not be handled very readily especially in small plants where no organized health program existed. To remedy this situation by active promotion of good health in the war-strained community, the Office of Industrial Health enlisted the cooperation of seven small local plants with employment rolls ranging from 70 to 700 employees. With a total of 2100 employees, these plants represented various types of industry such as food processing, chemicals, machining, paint and printing. They were used as a living laboratory in working out a method of operation for a good health program to reduce the mortality and morbidity of the adult working group, improve the health of this group and bring it under the supervision of the Health Department.

Health Program Defined—The hygiene program planned and put into operation in Long Island City by the Office of Industrial Health featured complete pre-employment physical examination to include a routine chest x-ray, serology test, hemoglobin determination and urinalysis. Occupational conditions were treated and non-occupational ills were to be given attention in case of emergency. Plant medical offices provided health consultation and advice regarding the health problems of any worker, while periodic complete physical examinations were designed to bring some of these problems to light. Suitable referral service to health agencies or private physicians was arranged for the handling of cases that could not be treated in the industrial health office. Programs concerned with other aspects of industrial hygiene—nutrition, health education, accident and absence studies—were organized. Periodic plant surveys insured the programs' success through correction or control of hazards discovered.

SERVICES by the Office—To simplify the operation of the program and aid in enlisting plant participation, various services were offered for a definite period of time without cost. Among these were chest x-ray service, plant medical department records and health education materials, and the attendance of Public Health Nurses for in-plant nursing service. Constant supervision and consultation by members of the Office of Industrial Health carried the experiment smoothly forward.

Program activities were designed to give the small plants all the benefits of a health program as carried out in a large plant and to include all features of a health program as recommended by various national organizations such as the U. S. Public Health Service, Division of Industrial Hygiene; the American Medical Association, Council on Industrial Health, and progressive management and labor organizations.

OBTAINING Qualified Physicians—From the very beginning of the Long Island City experiment, the Office of Industrial Health realized that it needed the cooperation of the local Queens County Medical Society in handling the strictly medical phases of the health programs. The Society agreed to set up an active committee on industrial health. The Committee's chairman maintained close liaison with the Director of the Office.

A general meeting of the Medical Society was devoted to the subject of industrial health with speakers of national prominence in attendance. After this meeting, a notice appeared in the Medical Society Bulletin asking for registration of physicians interested in a course of lectures on industrial health. A group of about 25 physicians responded. The course, held at the Medical Society Building two afternoons a week, consisted of eleven one and one-half hour sessions and covered many aspects of a complete industrial health program. Also included in the course was an observation visit to a plant medical department.

After the course was completed, each physician was interviewed by a committee and given a rating according to past industrial experience and training. In addition to this group, other physicians with special industrial experience were interviewed and placed on a list of physicians available for industrial health service.

OBTAINING Qualified Nurses—The nursing consultant of the Office interviewed Health Department nurses and selected seven on the basis of personality, previous education, experience, and interest in the program. At first young nurses only two or three years out of nursing school were selected. Later it was realized that nurses with more mature judgment were preferable because of their experience in organizational problems.

Once selected, nurses were put through a six-week orientation course. Frequent conferences on the objectives of the program and methods to be used were held with the nursing consultant and Director of the Office. Observation in the medical departments of about 15 plants of various sizes and types gave the nurses practical training in industrial health office operation. Plant medical departments cooperating were advised of the aims of the course prior to the visits of the trainees. Observation periods in each plant lasted from two days to a week depending upon the plant. Before visiting any plant, the nurse reviewed the office plant folder which described the plant medical program, manufacturing processes and plant problems under observation by the office. As the demonstration plants in Long Island City set up their medical departments, they too were used in training new nurses. Conferences were also held with the New York State Workmen's Compensation Board, with voluntary health agencies and with the engineer and chemist of the Office of Industrial Health on methods of environmental control.

MEDICAL Department Design—The design of the medical department in each participating plant was an individual problem and depended upon plant circumstances and layout. In every case, the Director of the Office surveyed the plant for a suitable location for the medical office. Additional suggestions were offered by the plant physician as soon as he was chosen.

INITIATION of Programs—In order to carry out the experiment, it was necessary for the Office of Industrial Health to enlist the active interest of plants without medical programs and also to limit the size of plants involved to those with employment rolls below 500. This was done with the ex-

From *Industrial Bulletin*, December, 1946.

PENICILLIN BY MOUTH

Bottles of 12—
50,000 units each

The use of BRISTOL PENICILLIN TABLETS ORAL (buffered penicillin calcium) in the carry-over period following the remission of fever in acute infections is now established as sound practice in the avoidance of relapses. Such therapy, like these tablets, is now acceptable according to the high standards of the Council on Pharmacy and Chemistry of the American Medical Assn.

BRISTOL PENICILLIN TABLETS ORAL

ACCEPTED
AMERICAN MEDICAL ASSN.
Council on Pharmacy and Chemistry

PENICILLIN LOCALLY

1-2 oz. tubes. Content of calcium penicillin, 1000 units per gram.

BRISTOL PENICILLIN OINTMENT DERMATOLOGIC provides yet another means of applying this useful and versatile antibiotic. The Council on Pharmacy and Chemistry has also found that beneficial therapeutic results may be expected from the local application of this penicillin ointment in impetigo contagiosa, infectious eczematoid dermatitis, certain carbuncles and, in fact, all skin conditions in which the exciting organism is staphylococcus aureus and albus, streptococcus pyogenes and hemolytic and non-hemolytic streptococci.

BRISTOL PENICILLIN OINTMENT DERMATOLOGIC

Immediately available through your usual source.

Bristol
LABORATORIES INC.
SYRACUSE 1, NEW YORK

ception of one plant with about 700 employees where a very unsatisfactory first aid program was already in operation.

Members of the office visited plant officials in the course of their duties, and asked them to participate in health programs aimed at improving their workers' health. If they signified willingness to cooperate, the Office Director visited them for discussion of necessary details. Plant management agreed to pay for its physician, for the construction and equipment of its medical department and for clerical assistance. All other services were supplied by the Office of Industrial Health including the attendance of an industrial nurse for one year. If the plant had its own physician and he was interested, a conference was arranged and the program was outlined to him. Whether he already worked with the plant or was selected from the County Medical Society's list, the plant physician, as director of the plant program, frequently consulted with the Director of the Office as the program developed.

RECORDS and Reports—In order to be evaluated, programs were kept as uniform as possible, and uniform record forms were devised to obtain necessary information. Plant management was asked what information it was interested in obtaining in order to sum up the program for its own purposes at the end of the year. These suggestions were incorporated in the record forms. As the program developed, the record forms were improved as needed. These record forms were supplied to the plants without cost and appear to be operating satisfactorily. Forms included a monthly statistical summary of all plant health activities and a monthly breakdown of all medical department visits by type and plant department. The Office of Industrial Health also received a monthly narrative report and copies of the minutes of plant Health Committee meetings.

TIME Standards — While methods which could be applied to other plants were being worked out, an attempt was made at standardization of the amount of doctors' and nurses' plant time needed. At the initiation of the program it was decided, after study, to require three hours per week of doctor's in-plant time for every 100 employees and three times as much nursing time per week—or nine hours. These standards worked satisfactorily as a beginning, until it was demonstrated in any plant that they should be changed because of individual problems. As finally worked out, the ratio of doctor's to nurse's time was anywhere from one doctor hour for every two and one-half nursing hours up to one doctor hour for every five nursing hours. In some plants doctors spent about two hours per week per 100 employees instead of three as originally suggested, but there hours was found more satisfactory if a full program was to be carried out.

HEALTH Committees—To facilitate worker cooperation, health committees were set up in the seven "laboratory plants." Typical committees consisted of a plant executive, possibly the vice-president, the plant manager, the chief union steward, the head of the maintenance department, several workers and several foremen. This committee elected a chairman and secretary and met each month for discussion of problems. In some plants, a sub-committee on safety, chairmanned by the maintenance man, was formed to inspect the plant for safety hazards and attempt correction. The State Labor Department's Division of Industrial Hygiene and Safety. Standards supplied a consultation service on environmental and occupational disease problems through its own office.

WHAT Are the Costs?—Particularly important to the Division of Industrial Hygiene and Safety Standards in its continuous work of promoting proper in-plant medical care in New York's factories were the standards of cost estimated through the Long Island City experiment. Figures worked out clearly proved that adequate industrial medical care can be provided at costs within the means of the average small plant.

In developing these standards, medical department quarters and equipment were considered as a capital item, which for the seven plants included in the study ranged from $550 to $3667 depending on the desires of each plant. On a ten-year depreciation basis, this would amount to from $55 to $360 a year. Operating costs of medical supplies were between $5 and $10 per month.

The pay of the physician varied between $5 and $10 per hour for in-plant service. A physician was paid $1200 annually for four hours of service per week in a plant of about 100 employees. In another plant with 200 employees ,the physician was paid $1800 annually for five hours service per week. The largest plant, which employed approximately 700 persons paid their physician $4500 for 20 hours of weekly service. On an hourly basis nursing costs averaged $1.09. Salaries of nurses were paid by the City Health Department and so depended on length of service with that Department.

Raising of hygiene standards improved plant morale and lowered absence rates. Besides these apparent premiums in good health, the Long Island City experiment was successful in proving that the large group of adults comprising the industrial population can be brought under proper health supervision and given the benefit of preventive health measures even though they work in small plants.

Industry's Toothache

—An industrial dentist explains the importance of dental care in an industrial health program—

ERNEST GOLDHORN, D.D.S.,
Pullman-Standard Car Manufacturing Company, Chicago

AN EXPANDING industrial economy, vastly accelerated by the recent demands of war and postwar domestic needs, has created many industrial health problems and has made imperative the conservation of industry's manpower resources.

The gigantic investments in plant facilities and the cost of training individual workers in highly specialized positions in industry demand utmost conservation and fullest utilization of available manpower. The productive effectiveness of the skilled craftsman depends largely on his state of general health and physical fitness. To reduce the needless expenditure of its manpower resources through ill health and physical impairment, industrial health programs have been developed in all major industries.

These industrial health programs have replaced the "company doctor" whose professional duties were concerned mostly with splints, the removal of foreign bodies, sutures and dressings, and only vaguely with matters relating to the general health of the worker.

The modern industrial health program, centered in a well-equipped and adequately staffed infirmary, serves industry and the worker by providing not only necessary care for the employee, ailing or injured because of occupational environment or circumstances, but also a service concerned with improving the health and physical well-being of every person in the organization.

The industrial physician and surgeon not only has specialized training in occupational medicine and traumatic surgery, but has a broad understanding of all phases of the health problem as it affects or is affected by the numerous and complex present-day industrial processes.

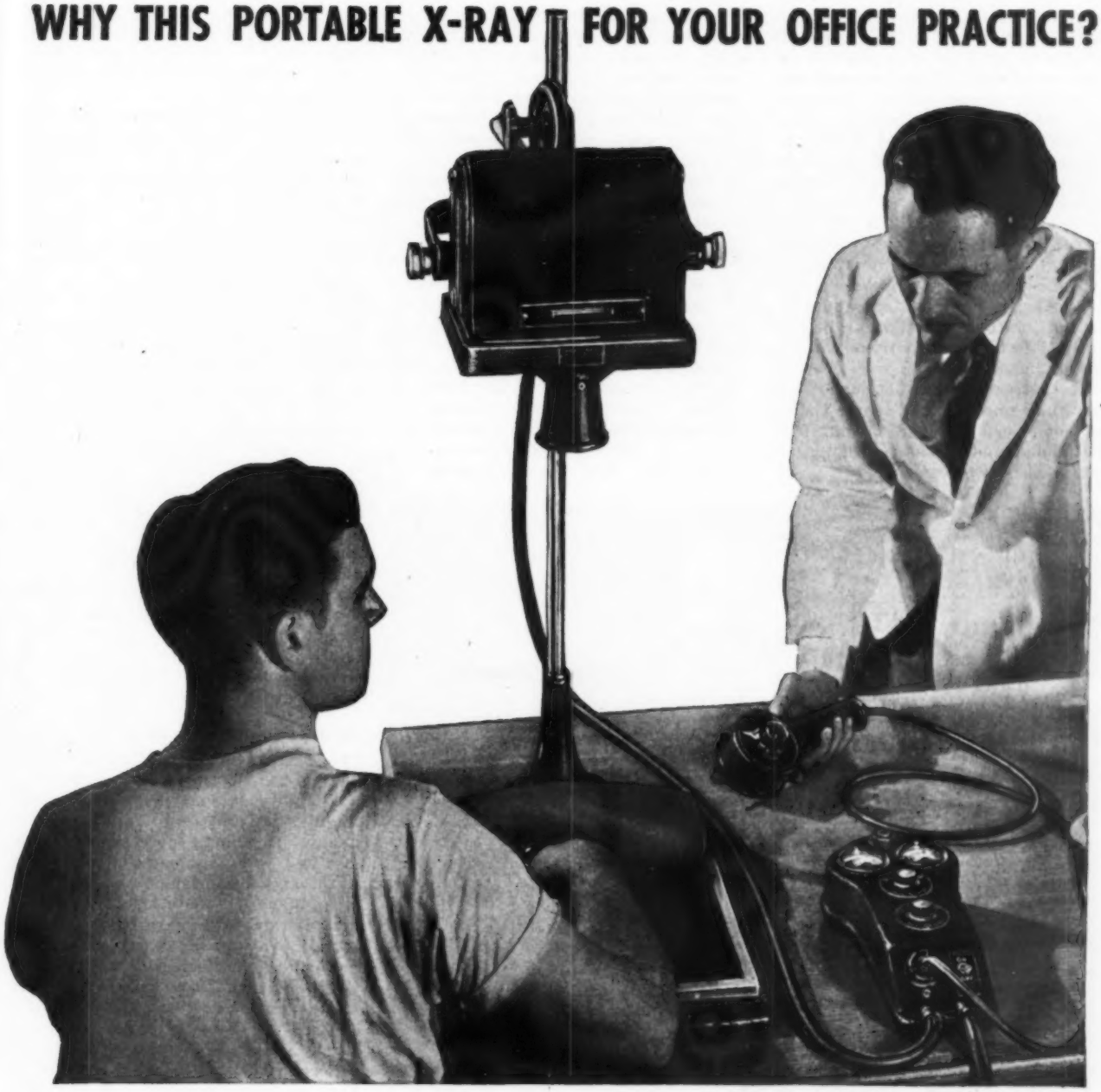
The staff of the industrial health program usually includes the ophthalmologist and other specialists in medicine and surgery, and members of the nursing profession. Numerous programs are augmented by the services of a chemist, hygienist, nutritionist, and psychiatrist, and a few include the services of a dentist.

Dental Ill Health

OF THE many factors that influence health, mental and physical fit-

From *Oral Hygiene*, September, 1946.

WHY THIS PORTABLE X-RAY FOR YOUR OFFICE PRACTICE?



The fact that thousands of physicians are today using G-E X-Ray's *Model F Portable* is perhaps the most convincing evidence of its recognized value.

You too, would soon conclude that for office x-ray examinations, the *Model F Portable* atop your desk or table greatly simplifies matters; also that the inambulant patient is grateful for this service right in his home.

Within the practical range of service for which this unit is intended, the quality of radiographs it is capable of producing is second to none, regardless of price. You'll also appreciate the high standard of workmanship throughout.

The moderate investment required, and the potential value of a *Model F* in your practice, assuredly justify your investigation. Mail this coupon today.

General Electric X-Ray Corporation,
Dept. 2610, 175 W. Jackson Blvd.
Chicago 4, Illinois

Send me complete information on the G-E Model F *Portable X-Ray.*

Name.....

Address.....

City.....

State..... D63

GENERAL ELECTRIC X-RAY CORPORATION

ness, such as nutrition, recreation, sanitation, and housing, dental ill health is probably the most constant and affects far greater numbers in all branches of industry and occupations. It may be conservatively projected from studies made that well over one-half the mouths of men and women in industry, upon examination, will evidence extensive dental pathosis.

Those charged with the responsibility of administering industrial health programs are fully aware of the fact that the worker whose mouth harbors extensive infection cannot retain his health, physical vigor, or productive effectiveness, or remain a safe worker, indefinitely.

The frequent exacerbations of untreated or uncontrolled dental lesions and their sequelae are a matter of continuous and serious concern to industrial health and safety.

Industry's toothache, today, invariably becomes its infected tooth of tomorrow, the source and portal of entry of pathogenic bacterial organisms invading the deeper tissues and vascular channels. Dental infection in this manner becomes the predisposing cause of many chronic disease processes and acute ailments that terminate in illness and disability, resulting in absenteeism and sizable manpower losses.

Oral Infection

THE many lame backs in industry, the arthritic joints, the neuritides, the cardiovascular and genito-urinary and a score of other ailments encountered daily in the industrial health program, make the need of dental diagnostic service imperative. Prolonged treatment and retarded recovery in the case of industrial injuries and occupational traumas is often attributable to dental infection. The elimination and treatment of dental sepsis is a prerequisite to the treatment of, and the recovery from, numerous ailments that beset the industrial worker.

Industry's toothaches are varied and endless and fraught with dangerous consequences. The many acute flare-ups that result from advanced stages of dental ill health flow into the industrial dental clinic in a continuous procession. Pain, loss of sleep, fatigue, and mental distraction are factors that prepare the stage for accidents. Industrial accidents do not just happen—they are caused. The personal equation enters into the cause of every accident, under adverse circumstances when human reactions do not respond as usual; for want of a better term, it is called "man-failure." Difficulty with an acutely involved tooth, frequently lasting several days, not only jeopardizes the victim's own safety but also the safety of his fellow workers. The man at work, using highspeed tools or performing a hazardous task, under such circumstances, is in desperate need of dental first aid. Emergency dental care is virtually indispensable in the industrial health program if time loss, work stoppage, and the accident potential are to be minimized.

Emergency Dental Care

THE frequency of accidents involving the dental tissues makes the availability of emergency dental care highly desirable to the industrial health program. Here again, time loss and work stoppage is minimized by having a dentist on the staff.

In numerous industries, the exposure of workers to harmful substances used in various processes presents a critical occupational disease problem to the health program. By proper dental supervision and the collaboration of the dentist, physician, hygienist, and safety engineer, virtually all occupational disease processes having oral manifestations may be controlled if not eliminated.

Despite the enormous dental health needs as they affect industry the development of industrial dentistry has not kept pace with progress made by the other health professions. Management has been reluctant to extend the benefit of dental health care, however limited, to its workers because of the stupendous scope of the problem. The dental profession has been indifferent to the development of industrial dental health service largely by reason of personal self-interest and preoccupation of its individual members.

The dental health problem and its relationship to the industrial economy has been recognized and studied by the Council on Dental Health of the American Dental Association and by various component societies of the parent body. The Council has encouraged the development of industrial programs within the prescribed limits set forth in the principles of

NEW
Pentothal Sodium Outfit
provides
completely closed technic
Developed to save time and simplify multiple administrations of Pentothal Sodium, the Johnson Outfit offers, for the first time, facilities for a completely closed method using the syringe, drip or a combination of both technics. By simply changing a short length of tube and the needle assembly, an entire day's schedule of administrations may be carried out without the usual loss of time involved in autoclaving preparation between patients. The equipment has been given exhaustive tests in hospital use.
Write now for complete information contained in a special circular explaining the new technic step by step and the complete equipment involved.
A. S. ALOE COMPANY
1831 Olive Street • St. Louis 3, Missouri
aloe

In the Over-All Picture of Human Nutrition

SUFFICIENT evidence has accumulated throughout the war years to establish the relationship between a poor nutritional status and worker acuity. Particularly impressive has been the incidence of accidents and decreasing productivity during the late morning hours in workers who ate a skimpy breakfast or skipped breakfast entirely.

To insure a good nutritional composition of the morning meal, a basic breakfast pattern has become widely accepted. Consisting of fruit, cereal (hot or ready to eat), milk, bread and butter, it supplies one-fourth to one-third of the average worker's daily requirement of essential nutrients. If more is required calorically, this basic breakfast is easily augmented by the addition of other suitable foods.

The serving of breakfast cereal, milk, and sugar is an important component of this breakfast. It contributes not only readily available caloric food energy, but also virtually all the essential nutrients except ascorbic acid.

The table indicates the nutritional contribution made by 1 ounce of ready-to-eat or hot cereal* (whole grain, enriched, or restored to whole grain values of thiamine, niacin, and iron), 4 ounces of milk, and 1 teaspoonful of sugar.

CALORIES.....	202	PHOSPHORUS....	206 mg.
PROTEIN.....	7.1 Gm.	IRON.....	1.6 mg.
FAT.....	5.0 Gm.	VITAMIN A.....	193 I.U.
CARBOHYDRATE.	33.0 Gm.	THIAMINE.....	0.17 mg.
CALCIUM.....	156 mg.	RIBOFLAVIN.....	0.24 mg.
NIACIN.....	1.4 mg.		

**Composite average of all breakfast cereals on dry weight basis.*

Physicians are invited to send for a complimentary copy of the brochure "Nutritional Health and the Industrial Worker" (IP-1).

CEREAL INSTITUTE, INC.

135 South La Salle Street • Chicago 3

The presence of this seal indicates that all nutritional statements in this advertisement have been found acceptable by the Council on Foods and Nutrition of the American Medical Association.

The *First* Successful Electrocardiograph producing *Instantaneous* STANDARD *Permanent* RECORDINGS

Cardiotron deliveries are becoming more readily available. Shortly you will be able to own this instrument of advanced electronic design. Greater accuracy, more speed, extra convenience in taking cardiograms. Cardiotron produces instantaneous standard Permograph recordings without time consuming photographic procedures. Physicians who own a Cardiotron acclaim it as the ultimate in instantaneous, permanent electrocardiography.

Contact your Cardiotron Dealer for demonstration or write for descriptive literature to

Cardiotron

ELECTRO-PHYSICAL LABORATORIES, INC., 298 Dyckman St., New York 34, N. Y.

Manufacturers of ELECTROCARDIOGRAPHS, ELECTROENCEPHALOGRAPHS, SHOCK THERAPY APPARATUS, AND SPECIAL ELECTRONIC EQUIPMENT

1942 by the House of Delegates of the American Dental Association.

The Illinois State Dental Society, taking cognizance of dental health needs of the workers in the industries within the State, has more recently enunciated principles and standards of programs to be controlled and promoted to the Industrial Committee of the Society. These principles and standards may be summarized, briefly, as follows:

1. Dental examination (clinical and roentgenographic), diagnosis and consultation.
2. Emergency dental care—dental first aid. Treatment of acute dental conditions.
3. Elimination and treatment of dental sepsis.
4. Recognition, study, and palliative treatment of oral manifestations of disease processes of occupational origin.
5. Treatment of industrial injuries involving dental structures.
6. Dental health education.

The services rendered under the plan must be part of a well-integrated health program and limited to nonrestorative dental procedures; the cost to be borne by industry, without fee charge to the employee.

The plan must be administered by personnel acceptable to the Industrial Committee of the State Society. Detailed records must be kept and conform to the standards prescribed.

Industrial dental health services, controlled and sponsored by the Illinois Dental Society and described in a brochure forwarded to industries within the state, adequately implement industrial health programs with essential dental health care without committing industry to the stupendous task of dental rehabilitation of its workers. The plan is adaptable to industrial organization and incurs a minimum of time and production losses.

A number of other component societies have taken similar action and several states have added dental consultants to the industrial hygiene divisions of the State Health Departments to aid industry and the profession in the development of such plans.

Dentistry as a public health profession has a tremendous opportunity of extending basic dental health care and education to a large section of the adult population, most of whom have never received the benefit of sorely needed dental health care. In doing so, dentistry will assume the responsibility with the other health professions of enhancing industrial stability, productivity, and safety.

IN THE PROUD TRADITION OF PINEOLEUM

Baybank Pharmaceuticals, Inc. has been created to carry on the distribution of **Pineoleum** brand Products which, for over four decades, have meritoriously served the medical profession. **Pineoleum** Compound is well accepted as a safe, effective means for strengthening the natural defenses of nasal tissues with an oily, soothing film. It is indicated when excessive dryness—occurring in the early stage of a cold, or because of climatic conditions—impairs the natural mucous protection of the membranes.

In the proud tradition of **Pineoleum,*** and under the aegis of its parent company—Chesebrough Mfg. Co. Cons'd.—**Baybank*** will from time to time introduce to the ethical medical field distinctively new medicaments—progressively formulated, clinically tested, and of lasting merit.

Remember **Baybank**—a name to rely on, for the finest in ethical, topical medicaments.

BAYBANK
TRADE MARK

* TRADE MARK

BAYBANK PHARMACEUTICALS, INC., NEW YORK 4, N. Y. • *Division of Chesebrough Mfg. Co. Cons'd.*

The Carious Tooth as a Portal of Entry for Poliomyelitis

HANS H. REESE, M.D., AND JOHN G. FRISCH, D.D.S.,
Madison, Wisconsin

CLINICAL evidence reveals a high frequency to bulbar infections of the neural axis among people submitting to tonsillectomy or extraction of teeth at the time of poliomyelitis epidemics. This evidence indicates that surgery exposes nerve endings which permit transmission of the virus toward the nuclear cells of the facial, oculomotor, trigeminal, vestibular and vagal nerves.

In 1946 Faber and Silverberg presented a report on eight autopsied human poliomyelitis cases. In seven of these cases poliomyelitic involvement was found in the trigeminal afferents, suggesting that "while its peripheral endings are not superficial, they might be exposed to virus in carious teeth, in pockets formed by gingival separation, or from trauma to the cheeks, gums or palate." These men also suggest that the pharynx, including both its nasal and oral portions, is the most important portal of entry for poliomyelitic infection.

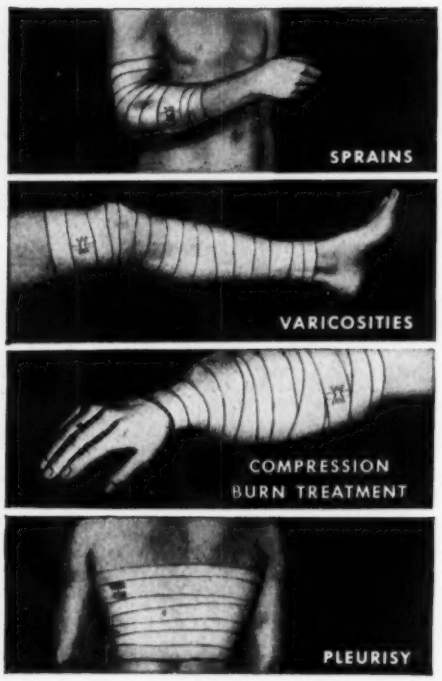
The evidence of virus transmission through the exposed pulp in monkeys led Aisenberg and Grubb to studies on polio transmission through the exposed dental pulp of human beings. Their examinations of 375 persons with polio and 394 persons without the disease, in the same age group and geographic areas (North Carolina and Baltimore), showed that the incidence of pulpal exposure was 40.97% to 42.93% greater in the polio patients. This variation is statis-

From Lippincott's *Digest of Treatment*, February, 1947; condensed from *Dental Digest*, July, 1946.

TENSOR* ELASTIC BANDAGE

IS WOVEN WITH

Live Rubber Thread



And that's the reason for TENSOR'S elasticity—TENSOR stretches to over twice its own length! *Live rubber* warp threads, sheathed in soft cotton yarn, "give" as bandaged parts move, yet provide therapeutic support. For *any* elastic bandage use, TENSOR has these advantages:

- exerts constant, controlled pressure without constriction.
- has *uniform elasticity*—rubberless bandages can't match its "stretch."
- *stays put*—no need for frequent readjustments; is comfortable to wear.
- *is inconspicuous*—women patients will wear TENSOR readily.
- withstands repeated laundering without loss of elasticity.

Some common uses of TENSOR are shown at left. You'll find a host of others in your daily practice—and you can depend on TENSOR for efficient performance. Recommend TENSOR with confidence, for *any* elastic bandage use.

*Reg. U. S. Pat. Off.

THERE IS NO BETTER ELASTIC BANDAGE THAN TENSOR!

A product of

BAUER & BLACK

Division of The Kendall Company, Chicago 16

TENSOR *Elastic* BANDAGE

tically significant because it is from 3.3 to 5.6 times twice the standard error of difference. Our findings in a relatively small number of cases (Madison) confirmed those of Aisenberg and Grubb.

It is not necessary that actual pulp exposure be present to permit access of the virus to the vast network of nerve tissue of the dental pulp. Exposed dentinal tubules present a pathway from 60 to 250 times greater than is necessary to permit passage of the virus.

We assume that foodstuffs contaminated with polio virus may be forced by mastication into the tubules and may travel along the fibrils to the pulp. From here the usual neural mechanism of virus transmission of the central nervous system follows established and accepted patterns.

The pulps of deciduous teeth are large in proportion to the total area of hard structure. The protective covering of enamel is only a little more than one-half as thick as that of the permanent teeth.

Our theory that tooth pulps and exposed dentinal tubules are important portals of entry in humans can be supported by concrete evidence: the incidence of poliomyelitis is less in populations where pulpal exposure and dental caries are greatly reduced; namely, in a composite of those communities which have drinking water with an adequate fluoride content as compared to a composite of communities with a deficiency of fluoride in the drinking water. However, data presented in the comparisons of fluoride and non-fluoride communities are predicted upon so many contingencies that the probability of error is great. Large numbers of fluoride communities must be compared with non-fluoride communities in the same general area over long periods of time, inasmuch as all communities are not subject to similar risks of exposure. Numerous surveys have demonstrated that a fluoride content as low as 0.5 part per million parts of water always reduces dental decay substantially among native children. It may reduce the incidence by as much as 30%.

We make an urgent plea to parents, physicians, and dentists to support all scientific measures for the inhibition of dental caries and to seal off these invasion foci during the early summer months in the hope that the incidence of this scourge of mankind may at least be reduced.

Medicolegal Aspects of Industrial Medicine

C. O. SAPPINGTON, M.D., Dr. P.H.

THIS editorial comment will be restricted to a discussion of the occupational diseases.

In considering the causes of occupational diseases, it is of great importance to keep in mind that an industrial exposure is not necessarily an occupational disease hazard. The amount, kind, and length of exposure are very often, and in most instances, the determining factors. Nor does it necessarily follow as a certain event that disease will be produced because an actual occupational disease hazard exists. A direct cause-and-effect relationship must be established.

The following classification is submitted to clarify our ideas regarding the different kinds of agents which may act as potential factors in the production of the various occupational diseases:

1. MECHANICAL (long continued friction, pressure or vibration; may produce, for example, bursitis, tenosynovitis, and mechanical plugging or abrasion of the skin).

2. THERMAL (extremes of temperature, by radiation or contact, may produce, for example, heat stroke, heat exhaustion, frostbite, or ordinary heat burns).

3. CHEMICAL (exposures to dusts, gases, liquids, vapors, and fumes; may

From Lippincott's *Digest of Treatment*, February, 1947.

GUARD AGAINST DERMATITIS with PLY

the Before-Work Protective Cream

14 Ply Formulas Meet All Recognized Industrial Dermatitis Hazards and Irritants

PLY is the registered name for the line of creams and liquids which have been prepared to provide *positive protection* against specific types of industrial skin hazards. PLY provides an invisible coating over the skin wherever applied . protecting it like a glove from harmful irritants.

If you are not familiar with the wide range of PLY protection, we urge that you get the facts by writing for your copy of our book "The Answer to Industrial Dermatitis." Furthermore, our Research Staff is at your service without obligation . . . if you are confronted with any unusual dermatitis problems, furnish us with data on pertinent facts.

The only reference book of its kind "The Answer to Industrial Dermatitis" is of inestimable value to all concerned with combating industrial dermatitis.

PIONEERS IN RESEARCH FOR PREVENTION OF INDUSTRIAL DERMATITIS

THE MILBURN COMPANY
3246 E. WOODBRIDGE • DETROIT 7, MICH.

3 way relief for MINOR SKIN INJURIES

CAMPHO-PHENIQUE

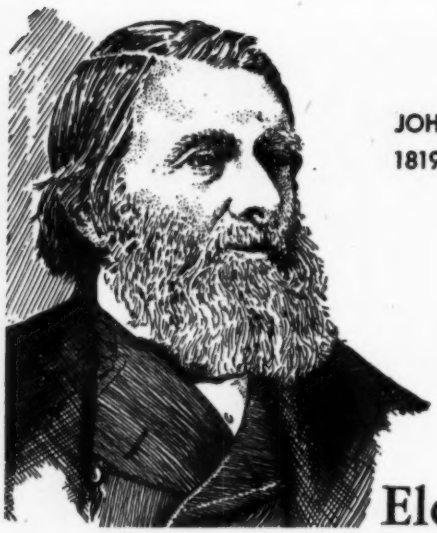
(Phenol 4.75%, Camphor 10.85% in an Aromatic Mineral Oil Base)
delivers prompt Analgesic, Antipruritic and Antiseptic action!

Many industrial clinics have long relied on this convenient and effective first aid for emergency dressings and wet packs. Its multiple action works as a mild surface anesthetic to relieve pain, also combats swelling and secondary infection. Prescribed for

Minor Cuts and Burns
Abrasions • Bruises
Irritations
Lacerations

SEND FOR A FREE BOTTLE
CAMPHO-PHENIQUE
Dept. IM-3, Monticello, Illinois
Please send me a free bottle of Campho-Phenique Antiseptic Dressing.

Name.....
Address.....
City.....*State*.....



JOHN RUSKIN
1819-1900

Ruskin . . . *and the* Cambridge Electrocardiograph

A Doctor recently sent us the quotation from Ruskin which we print below. He commented that although written long before the age of Electrocardiography, this philosophy is indeed pertinent today and applies generally to medical equipment and particularly to Electrocardiographs:

"There is hardly anything in the world that some man cannot make a little worse and sell a little cheaper . . . It's unwise to pay too much, but it's worse to pay too little. When you pay too much, you lose a little money—that is all. When you pay too little, you sometimes lose everything because the thing you bought is incapable of doing the thing it was bought to do. The common law of business balance prohibits paying a little and getting a lot. It can't be done."

THE "SIMPLI-TROL" PORTABLE MODEL. MOBILE AND STATIONARY MODELS ALSO AVAILABLE

We quite agree that this philosophy is pertinent to the selection of Electrocardiographs. The Doctor who buys a Cambridge, buys a proven instrument of unquestioned accuracy . . . the choice of discriminating Cardiologists everywhere. You can afford no less—nor can you buy more.

CAMBRIDGE
all-electric
ELECTROCARDIOGRAPH

Send for descriptive literature

ANY MODEL MAY BE ARRANGED TO RECORD HEART SOUNDS AND ELECTROCARDIOGRAM SIMULTANEOUSLY

CAMBRIDGE INSTRUMENT COMPANY, INC., 3716 Grand Central Terminal, New York 17, N. Y.
Pioneer Manufacturers of the Electrocardiograph
MAKERS ALSO OF THE CAMBRIDGE ELECTROKYMOGRAPH, CAMBRIDGE PLETHYSMOGRAPH, CAMBRIDGE AMPLIFYING STETHOSCOPE, CAMBRIDGE BLOOD PRESSURE RECORDER, ETC.

produce, for example, silicosis, asbestosis, hydrogen sulphide poisoning, chemical dermatitis, benzol poisoning, and lead poisoning.

4. PHOTIC AND RADIOACTIVE (exposures to sun rays, ultraviolet and infra-red rays, x-rays, radium, and mesothorium emanations; may produce, for example, sun-stroke, burns, cataracts, and x-ray and radium effects).

5. ELECTRICAL (exposures to various forms of electrical energy, which may produce, for example, burns of the skin or eyes, electric shock, or death).

6. BACTERIAL AND PARASITIC (exposures to bacteria or parasites, which may produce, for example, anthrax, glanders, hookworm disease).

7. ATMOSPHERIC (overlapped with class 3, but also includes exposure to air compression and rarefaction; may, for example, produce caisson disease, and oxygen-deficiency effects).

It will be observed that these groups of various agents overlap somewhat and that some of the effects are considered as injuries; it should be noted, however, that there are mentioned in some of the state laws with reference to compensation for disability from occupational diseases, certain conditions which are construed by many as being injuries instead of diseases. It is believed, therefore, that an absolute statutory distinction, as well as a non-overlapping classification of potential agents, cannot be made in every instance.

It should be reiterated that the mere presence of these potential agents in the industrial environment does not constitute an actual occupational disease hazard.

Industrial hygiene activities in working out etiology or exposure are frequently carried out in the following way:

1. PRELIMINARY SURVEY
   - A. Reports from heads of all departments as to equipment, operations, materials, and occupations.
   - B. Lists from Purchasing Department (with samples) of all materials, and amounts consumed annually.
   - C. Reports from Medical, Safety, and Compensation Departments relating to past experiences.
   - D. Routine visual inspections of all departments.
2. THE TECHNICAL SURVEY
   - A. Determinative, sampling and analytical procedures.
   - B. Special physical and laboratory examinations.
   - C. Miscellaneous hygienic observations.

EVALUATION AND APPLICATION OF INFORMATION. A. Detailed interpretative report including (1) location and nature of hazards; (2) control or elimination measures; (3) special periodic examinations.

FOLLOW-UP PROGRAM. A. Standardization and continuous supervision.

B. Periodic checkup on changes in materials, methods, machines, and men.

C. Educational activities.

Finally, there is the application of the etiologic material (through quantitative and qualitative determinations of the industrial exposure by industrial hygiene engineering methods) and the diagnostic data to the medicolegal aspects of the problem. This means that there must be a clear cause-and-effect relationship established between employment, disease and disability and that they must be interrelated.

It seems basic that the following questions should be answered in every case before intelligent consideration can be given to the merits of the claim:

1. Do the working conditions under which the employee labored present an actual occupational disease hazard? (This does not mean mere exposure, but means that there are occupational conditions existing (by actual measurement) which are capable of producing an occupational disease.)

2. Has the employee a real occupational disease as he claims? (This means that an occupational disease which is characteristic of and peculiar to and which occurs with regular

PROPPER BRAND MICHEL WOUND CLIPS

have a *Plus* value

Manufactured of finest 18% non-corrosive nickel silver, these precision-made clips are unexcelled for uniformity of angulation, needle-sharp points, desired bending strength and durability.

They feature a patented "Anchor"

Affixed to one end of the gang wire, this practical innovation offers the following advantages—

1. The "Anchor" may readily be slid off the wire or repositioned by finger pressure . . . the required number of clips freely removed . . . remaining clips retain their factory-new characteristics for future use.
2. The gang wire need never be bent to disengage or secure remaining clips, thus no series of humps are developed in the wire which might hinder removal of further needs.
3. As no snipping of wire is necessary, there is virtually no possibility of pricking the finger or puncturing a rubber glove on resultant burrs.

Available in 11, 14, 16, 18 and 22 mm. sizes

Your dealer can supply you

PROPPER MANUFACTURING CO.
10-34 44th Drive Long Island City 1, N. Y.

VISION and SAFETY

Poor vision is often a contributory cause of accidents in certain occupations. Visual requirements are necessarily important on various types of industrial work.

KEYSTONE
INDUSTRIAL VISUAL SAFETY (IVS) TESTS

1. Reveal visual defects.
2. Indicate those that are probably remediable.
3. Furnish a basis for occupational placement for safety and efficiency.
4. Are used by leading industrial organizations.

Write for complete information

KEYSTONE VIEW COMPANY
Industrial Safety Division
MEADVILLE, PENNA.

SINCE 1892—PRODUCERS OF SUPERIOR VISUAL AIDS

THE season of throat affections is here.

Thantis Lozenges have proved especially effective in soothing and relieving these conditions. The effectiveness of Thantis Lozenges is due to two active ingredients:

Merodicein* an antiseptic which prevents the development of bacteria even in great dilution

Saligenin† a mild local anesthetic which relieves the discomfort of throat infections.

Thantis Lozenges are antiseptic and anesthetic for the mucous membranes of the throat and mouth. Complete literature on request.

Supplied in vials of twelve lozenges each.

* Merodicein is the H. W. & D. trade name for monohydroxymercuridiiodoresorcinsulfonphthalein-sodium.
† Saligenin is orthohydroxybenzylalcohol, H. W. & D.

Thantis Lozenges

HYNSON, WESTCOTT & DUNNING, Inc. *Baltimore 1, Md.*

FREE! Castle's NEW CONSOLIDATED CATALOG

For Hospital Safety in Your Dispensary

THIS NEW Castle Catalog is compiled especially for industrial medicine! It is a collection of booklets describing, in detail, Castle Lights and Sterilizers that make hospital practice and safety a reality in the plant dispensary or small hospital. Wilmot Castle Co., 1161 University Ave., Rochester, N. Y.

Fill out and mail the coupon today. No obligation.

USE THIS COUPON FOR YOUR FREE COPY

Wilmot Castle Co.,
1161 University Ave.
Rochester 7, N. Y.

Please send free copy Castle's Consolidated Catalog for Industrial Medicine.

Name.....

Address.....

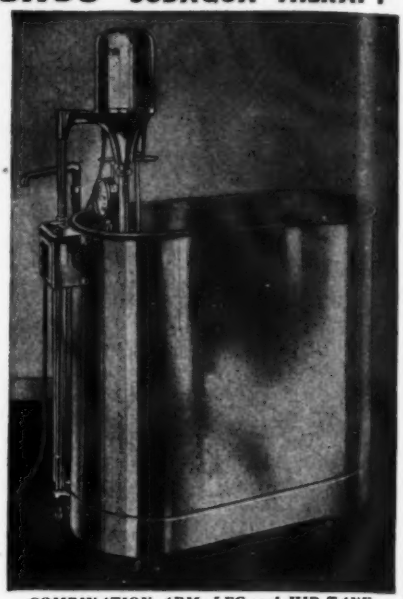
City..... State.....

REDUCE ABSENTEEISM FROM DISABILITY

HYDROMASSAGE SUBAQUA THERAPY

Time of disability of industrial injuries can be reduced 25 to 50% where this form of therapy is indicated.

Time of manual massage can be reduced 50% when this therapy is used as a preliminary.



COMBINATION ARM, LEG and HIP TANK.
(An Improved Mobile Whirlpool Bath)

COMPARE—

1. *Tank* constructed of heavy 18-gauge seamless, completely electrically welded, stainless steel.
2. *Turbine Ejector* furnished with high speed, lifetime sealed-in, greaseless bearing motor which *DOES NOT* require lubrication.

These and many other distinctive features are exclusive in Ille Tanks and cannot be found in any similar equipment on the market.

See Demonstration Booth No. 29, Industrial Physicians Convention, Buffalo, New York.

Write for complete literature to

ILLE ELECTRIC CORPORATION
36-08 33rd STREET, LONG ISLAND CITY N. Y.

Introduction to

INDUSTRIAL MEDICINE

Edited by T. Lyle Hazlett, M. D.

The long awaited Textbook of Industrial Medicine—endorsed by The American Association of Industrial Physicians and Surgeons

CHAPTER

1. Industrial Medicine—*T. Lyle Hazlett, M.D.*
2. An Industrial Medical Department—*T. Lyle Hazlett, M.D.*
3. Minor Injuries—*Harold G. Kuehner, M.D.*
4. Eye Injuries—*Charles F. Kutscher, M.D.*
5. Gases, Vapors, Dusts, Fumes and Mists—*William P. Yant, B.S., D.Sc.*
6. Industrial Dusts—*T. Lyle Hazlett, M.D.*
7. Silicosis—*T. Lyle Hazlett, M.D.*
8. Industrial Exposure to Some Toxic Metals—*Edgar C. Barnes, B.S.*
9. Carbon Monoxide—*Frank Saylor Rossiter, M.D.*
10. Solvents and Volatile Organic Materials—*Henry F. Smyth, Jr., B.S., Ph.D.*
11. Personal Respiratory Protection—*William P. Yant, B.S., D.Sc.*
12. Laboratory Methods—*Palmer L. Beebe, M.D.*
13. Industrial Hygiene Surveys—*Joseph Shilen, M.D.*
14. Electricity—*Charles F. Engel, M.D.*
15. Air Conditioning—*Frank H. Stiening, M.E.*
16. Heat Disease—*Martin W. Heilman, M.D.*
17. Nutrition in Industry—*Frank M. Gatto, M.D.*
18. Education in Industrial Health—*John R. Conover, M.D.*
19. Medico-Legal—*T. Lyle Hazlett, M.D.*

Price $3.00

Order from

INDUSTRIAL MEDICINE

frequency in the occupation, has been diagnosed by a capable physician.)

3. Was the occupational disease in question, contracted while working for the employer against whom the claim has been filed? (Here the precise application of the cause-and-effect relationship is necessary.)

4. Is the employee disabled from the effects of the occupational disease he alleges to have? (The answer involves the proper use of differential diagnosis ruling out disability due to the ordinary diseases of life and a critical study of the factors in the estimation of disability.)

Curable Heart Disease

—Mistakes in General Practice—

ALL cardiac cases can be helped; some can be cured. A number of papers on the topic of reversible or curable heart disease have appeared in the last few years. One of the latest is by T. K. Williams, M.D., of Paducah, in *Kentucky S.J.M.*

1. The patient with severe symptoms of heart disease, angina or heart failure who does not show the expected response to diuretics, rest and digitalis, should be suspected of having a thyrotoxic heart (goiter heart).

2. The patient whose heart under the fluoroscope shows a vigorous, snappy, hyperactive beat "just the reverse of what one would expect with a given degree of heart failure or pain," may be suffering from thyrotoxic heart, severe anemia, beriberi heart (vitamin B_1 deficiency), arteriovenous fistula, patent ductus arteriosus, neurocirculatory asthenia and pneumothorax.

3. Dyspnea, cough, palpitation, edema, chest pain and later congestive failure, occur in thyrotoxic heart disease. Diarrhea, weakness and nervousness, loss of weight, increased sweating, irregular heart rate with tachycardia, large pulse pressure, enlargement of the heart and pistol-shot sound in the cubital fossa may occur.

The above patients can be returned to a useful pleasant life *if the physician makes an accurate diagnosis.* "It is a large group of cases in which the difference between accurate and inaccurate diagnosis means chronic invalidism or death and restoration of life and health." The "masked" cases may present only a rough apical systolic or diastolic murmur, with a snapping first sound, or may be considered as having hypertensive heart disease or cardiac decompensation.

Chronic constructive pericarditis: Characterized by a small, quiet heart, a high venous pressure, ascites and enlargement of the liver, plus edema and fluid in the pleural cavity. Under the fluoroscope, the heart shows diminished or absent pulsations. It may be enlarged only slightly, if at all. Later, calcified plaques appear. *Treatment.* Removal of a portion of thickened pericardium is often curative.

Patent ductus arteriosus: This condition is usually recognized by the fourth year of life. A loud, "machinery" murmur may be heard over the entire precordium. Those patients showing under-development, cardiac decompensation or failure are justifiable risks for ligation of the duct.

Arteriovenous aneurysm: The communication between the artery and vein may be congenital or acquired, the latter usually being the result of an injury such as a gunshot wound in the femoral or popliteal areas; the patient usually suffers from edema of the extremity, intermittent claudication and ischemic neuritis. A thrill, pulsation, and murmur appear over the aneurysm. As a result of the increased flow of blood, the heart is overworked to the point of hypertrophy and congestive failure. Surgical ligation or removal usually cures.

Anemic heart disease: A hemoglobin of 50% increases the work of the heart markedly, or may cause congestive heart failure (hookworm is a frequent cause of such severe anemias). Treatment includes transfusion, liver, iron, rest.

Myxedema heart: The heart is usually enlarged and decreases in size when thyroid extract is administered.

Vitamin deficiency Vitamin B, deficiency produces the picture of cardiac failure. One must rule out organic heart disease; a history of alcoholism or dietary deficiency is often obtained; painful polyneuritis may be present; prompt response to B_1 (thiamine) occurs.

From *Clinical Medicine*, February, 1947.

Sutures for *Traumatic Surgery*

• Here is every type of suture you need, from silk for a simple skin closure to catgut and other materials for major surgery.

Made by specialists in sutures with over half a century of successful service to the surgical profession.

ORDER FROM YOUR SURGICAL DEALER

ETHICON *Sutures*

ETHICON SUTURE LABORATORIES

DIVISION OF JOHNSON & JOHNSON, NEW BRUNSWICK, N. J.

QUICK DEATH to BACTERIA

Rapid killing of bacteria is one of Iodine's outstanding characteristics.

Many investigators and prominent surgeons and scientists are quoted by Gershenfeld and Patterson in the American Journal of Pharmacy (January 1945). They point out that for four decades, Iodine has been prominently in the foreground as an antiseptic of choice for use as a skin disinfectant, particularly for the treatment of minor injuries and in preoperative surgical procedures.

In addition to its remarkable antiseptic and fungicidal action, Iodine and its compounds serve the medical profession in many ways.

Its necessity in the prevention of goiter and its usefulness as an adjunct in the reabsorption of granulomatous lesions are important contributions in the fields of Prevention and Therapy.

Moreover, the value of organic iodine compounds as radio-opaque substances makes Iodine exceptionally useful in certain diagnostic procedures.

IODINE

OF SERVICE TO MEDICINE
FOR PREVENTION · DIAGNOSIS · THERAPY

IODINE EDUCATIONAL BUREAU, INC.
120 Broadway, New York 5, N. Y.

Reliability
. . . HAYDEN'S
VIBURNUM COMPOUND

HVC
PHYSICIAN'S SAMPLES SENT ON REQUEST.

Reliability and faithful service characterize the alert air line stewardess. It is this same characteristic that has lead a constantly increasing number of physicians to prescribe H V C as an effective antispasmodic and sedative in many obstetrical and gynecological conditions and as a general antispasmodic. H V C is extensively prescribed for dysmenorrhea, menorrhagia and metrorrhagia.

NEW YORK PHARMACEUTICAL COMPANY
Bedford Springs Bedford, Mass.

★ REG. U. S. PAT. OFF.

S'WIPE'S*
CELLULOSE TISSUES

S'WIPE'S Tissues are made from extra quality cellulose in two regular sizes and packaged in five different counts. Your dealer can supply you with samples and prices. If he can not help you please write to us.

The GENERAL CELLULOSE CO., Inc.
GARWOOD, NEW JERSEY

MEMBER
AMERICAN SURGICAL TRADE ASSOCIATION
NATIONAL ASSOCIATION OF MANUFACTURERS
HOSPITAL INDUSTRIES ASSOCIATION

NEWS, COMMENT, OPINION

Strike Over Doctor

A STRIKE of more than 400 miners at the Red Jaket Coal Corporation's pit here was ascribed today by a union official to company refusal to recognize a union-appointed doctor. H. O. Franklin, President of United Mine Workers Local 7209, contended that the miners had the right under the U.M.W.'s contract with the Federal Government to name Dr. M. E. Meck as their physician on January 4, after Dr. E. M. Wilkinson had informed them he was raising his monthly rate to each from $2.25 to $3.00.

—*New York Sun*, February 12, 1947.

Safeguards for Atom Workers

THE harnessing of atomic power for industrial use has been held up pending the development of methods of protecting workers. The U. S. Public Health Service already has a team of scientists working at Oak Ridge, Tennessee, to determine the "limit of tolerance" of human beings to radio-active substances. Meanwhile, Miss Dorothy L. Burns has brought suit for $200,000 against the Westinghouse Electric Corporation, alleging that she contracted "uranium poisoning" while doing research work. Listing as symptoms shortness of breath, pains in the chests, and progressive general debility, Miss Burns says her doctor has said he doesn't know what to do for her.

—*Medical Economics*, January, 1947.

Portal-to-Portal Medicine

IT IS difficult to imagine that the present controversy over the portal-to-portal wage question would have any medical angle. But, it does. *The United States News* points out that under the portal-to-portal decision of the Supreme Court, medical treatment will be considered work where a worker is injured on the job, but subsequent visits to the physician outside working hours will be ignored. In other words, if the worker chooses treatment by a private physician off the company premises, he will not be able to collect wages for the time involved. If he goes to the company physician during working hours, the time involved will be considered "working" time. Thus, we find both the employee and the company in a compromising position. If the employee desires a physician of his own choice located off the company's premises, he must decide between free choice of physician on one hand and loss of certain pay which he would get if he goes to the company physician during working hours. The company faces a different situation. If it is going to have to pay the employee when he calls on the company physician for treatment or physical examinations during working hours, the company may decide that it should dispense with some of the medical-health programs which in the past have been for the best interests of employees. These situations may never occur. Nevertheless, they are potentialities. This situation is just one of the reasons why the Congress must take some action to meet the "legislative" decision the Supreme Court has rendered.

—*Ohio State Med. J.*, February, 1947.

Doctors and Trade Unions

IN ONE case in Canada, and, more generally in Great Britain, the possibility has ocurred that physicians would be required to join a labor union. All civic employees of the City of Toronto are compelled by law to belong to a particular union, and it was only after a brief drawn up by the Ontario Medical Society stating the objections to the inclusion of physicians, that they were exempted. A similar situation is developing in a number of municipalities in Great Britain, where a

TWO Outstanding Blood Instruments

SPENCER Hb-METER
for Hemoglobin Determination

Determinations of laboratory accuracy can be made in less than three minutes. No diluting fluids nor volumetric measurements are necessary. The Spencer Hb-Meter operates from built-in batteries. It is pocket-sized and may be conveniently used anywhere. See your local supplier or write Dept. P131.

SPENCER
HAEMACYTOMETER
for Blood Counting

This is the only chamber with a semi-transparent metallic coating which eliminates glare, increases visibility, and insures more even distribution of cells. It is by far the largest selling instrument for counting corpuscles. See your local supplier or write Dept. P131.

American Optical COMPANY
Scientific Instrument Division
Buffalo 15, New York

Manufacturers of the SPENCER Scientific Instruments

For EARLY AMBULATION

You can Always Rely on the Dependable

ACE "LASTEX"* (NO 8.) BANDAGE

HERE'S WHY—

1. Slipping of ordinary bandaging, usually caused by motion, is practically eliminated by the firm support of ACE "LASTEX"* (No. 8).
2. This firm elasticity of ACE "LASTEX"* (No. 8) is always constant, yet permits freedom of motion without constriction.
3. The material in ACE "LASTEX"* (No. 8) is a special strong round elastic yarn, protected by a finely woven covering which inhibits deterioration such as with ordinary rubber strands.
4. Its skin-tone color, cool-comfort and washability, make ACE "LASTEX"* (No. 8) a most desirable bandage.

B-D PRODUCTS
Made for the Profession

*Reg. U. S. Pat. Off.

You can recommend ACE "LASTEX"* (No. 8) with confidence in its proved results.

BECTON, DICKINSON & CO., RUTHERFORD, N. J.

1897 — SERVING THE MEDICAL PROFESSION FOR FIFTY YEARS — 1947

closed shop is mandatory. Some local authorities accept membership in the British Medical Association as sufficient; others, interpreting the law strictly, on the ground that the B.M.A. is not a trade union, require trade union memberships for physicians employed by local governments.

—*Canad. Med. Assoc. J.*, 55, 611-612. December, 1946, in *Industrial Hygiene Digest*, January, 1947.

Dentistry in the Health Program

THAT neglected and septic mouths are a potential source of costly loss of labor and management alike is an accepted fact. No one can estimate the suffering and ill health that accompany wholesale dental caries due to lack of knowledge and lack of dental care. That dental disease progresses unabated in the mouths of 80% of America's industrial dental survey.

When absenteeism and inefficiency as major problems in production began to be appreciated, the entire approach to industrial hygiene was bound to undergo important changes. Now that it is recognized that the sick worker is a loss both to himself and management, whether he has lead colic, an injured finger, arthritis or an infected mouth, steps are being taken for the prevention of a recurrence. One of the first steps in a preventive medical program should be the care of the mouth. Some form of a dental program should be incorporated in the industrial medical program in order to bring the results of preventive practice to a higher degree of perfection. Industrial dental programs may be educational, emergency, remedial or all three.

A dental program consisting simply of clinical examination with x-ray service will disclose findings along the following lines:

1. Dental caries
2. Root abscesses
3. Pulp stones
4. Infectious mouth diseases ("Trench mouth," etc.)
5. Non-infectious mouth diseases ("Pyorrhea, etc.)
6. Miscellaneous — tumors, fractures, root erosion, tooth abrasions, soft tissue lesions, root tips, etc.

The above conditions may often continue without symptoms and their detection at an early stage may save considerable time, pain and money at a later date.

While the initial outlay for a dental program may seem high, the benefits derived therefrom more than compensate for the expense involved. For example, a study conducted by the Metropolitan Life Insurance Company clearly points to the fact that a higher incidence of neuralgia, neuritis, headache, nervousness, colds, furuncles, abscesses and albuminuria prevails among those people with poor dental health than among those with good dental health.

—*What's New in Industrial Hygiene*, July-September, 1946.

Public Health Propaganda

THE following editorial appeared in the December 13 issue, of the *New Haven Evening Register*. "Public Health Propaganda: The American Medical Association's House of Delegates, by unanimous resolution, censures the Surgeon General of the U. S. Public Health Service for 'political activities.' The rebuke thus delivered to Dr. Thomas A. Parran for his reputed efforts toward propagandizing President Truman's compulsory health insurance plans appears a deserved one. The surgeon general's department was established and is now financed to promote the public health and to take leadership in the fight against disease. It was not created to engage in partisan politics or to attempt the foisting of new methods of restriction and control upon the American people. Its interest in the unwanted Wagner-Murray-Dingell compulsory health measure, if any, should be academic, not promotional. It was charged before this medical group that Dr. Parran, in a letter to all staff members, issued orders that all their public utterances be guided by, and in support of, President Truman's 1945 message to Congress pumping for this health regimentation scheme. Any such order is comparable to that of the President when he attempted, fortunately with small success, to gag Navy spokesmen in their opposition to a one-sided merger of our armed forces. Such political activity should have no place in the nation's health service organization. It has been conclusively demonstrated on numerous occasions that adoption of any such system as that advocated in the Wagner-Murray-Dingell bill could

Experience is the Best Teacher

Sir Charles Bell
(1774-1842)
proved it in Neurology

After years of research and experiment, Sir Charles Bell explained the human nervous system as he saw it. His greatest discovery is known as Bell's law: That the anterior spinal nerve roots are motor and the posterior spinal roots are sensory. The stubborn searching necessary to establish his findings proves—*experience is the best teacher.*

Yes, and experience is the best teacher in smoking too!

The wartime cigarette shortage is only a memory now, but that's when millions of people—smoking any brand they could get—learned the differences in cigarette quality.

And, significantly, more people are smoking Camels than ever before in history. But, no matter how great the demand:

Camel quality is not to be tampered with. Only choice tobaccos, properly aged, and blended in the time-honored Camel way, are used in Camels.

According to a recent Nationwide survey:

MORE DOCTORS SMOKE CAMELS

than any other cigarette

R. J. Reynolds Tobacco Company, Winston-Salem, N. C.

have but a single result. This would be the utter regimentation of every employed patient and physician in this country. This would be accomplished through the additional evil of a tremendous increase in taxation. It would throw open the road to medical stagnation and health by directive under bungling and costly bureaucratic methods at a time when an incoming Congress will be confronted with the major task of paring an already over-inflated national budget. It is indeed unfortunate that a Congress faced with such major objectives should be forced to devote considerable time and attention to any measure so obviously of the planned economy variety. Last November 5 the voters of this nation returned their verdict on regimentation and control from Washington, wehther it be in the field of commodities or that of medicine. In addition some 55,000,000 Americans, including more than 650,000 from Connecticut, have cast their vote on the subject of socialized medicine by enrolling for voluntary forms of health insurance or hospital care. The 80th Congress should find little difficulty in disposing of this compulsory health bill in the proper form. Meanwhile, Surgeon General Parran and his aides would do well to cease and desist from further excursions into the propaganda arena."

—Editorial in *Connecticut State Med. J.*, February, 1947.

Only a Reprieve

THE election is a suspended sentence—a reprieve from State Socialism—a few months, or a year or two of grace. That's all. The time before the assault begins again should be devoted to a year-round campaign of education on the basic economics of the competitive market system. Popular polls show that 51% of our people do not know what a balanced budget is; that only 30% understand what free enterprise means; that only one voter in four knows what the Bill of Rights is; that millions believe there is some magical way by which the government can create wealth; that a huge debt is of no importance because we owe it to ourselves; that government can guarantee 'security'; that 72% believe as much or more is disbursed to capital as is paid out in pay envelopes; that everyone in Russia gets the same pay. Is it any wonder that European State Socialism has made such inroads on the American mind? Each one of these myhs is false. But who has shown them to be so? It must be taught in words that bounce along the sidewalk that wealth and 'security' come only from work, and not from the printing press, or by writing more dollar marks on pay envelopes. Only the people can produce properity, not any party, except as it promotes industry by encouraging the industrious."

—SAMUEL P. PETTENGILL, quoted in *Ohio State Med. J.*, January, 1947.

At Columbia

IN ORDER to meet the growing demand for trained personnel the Columbia University School of Public Health is developing courses of study for physicians, nurses, engineers and chemists whose chief interest lies in the field of industrial hygiene or occupational medicine. For the academic year starting in September, 1947, properly qualified students will be accepted as candidates for the degree of Master of Public Health or Master of Science in Industrial Hygiene. The curricula will include lectures, seminars, demonstrations, laboratory exercises and field work appropriate to the needs and interests of the students. Students working toward the Master of Public Health degree will be required to take, in addition to their industrial hygiene work, courses in other public health subjects such as biostatistics, epidemiology, administration, sanitary science and health education. Those enrolled for the Master of Science degree will be permitted to concentrate to a greater extent on industrial hygiene subjects. It is believed that Columbia's program represents the first effort on the part of a teaching institution to offer formal academic instruction to all types of industrial hygiene personnel. Further information may be obtained from the Director, Columbia University School of Public Health, 600 West 168th Street, New York 32, New York.

Cooperation

A FEW months ago an interesting article appeared in a medical journal on "What Industry Expects of Medicine" (*Connecticut State Med. J.*, 10:4-296, April, 1946) which is most interesting and should be read by physicians everywhere. This article shows the urgent need for a cooperative program between the medical profession and industry as

AT HOME OR AWAY SPOT TESTS SIMPLIFY URINALYSIS

NO TEST TUBES • NO MEASURING • NO BOILING

Diabetics welcome "Spot Tests", (ready to use dry reagents), because of the ease and simplicity in using. No test tubes, no boiling, no measuring; just a little powder, a little urine—color reaction occurs at once if sugar or acetone is present.

Galatest FOR DETECTION OF SUGAR IN THE URINE Acetone Test (DENCO) FOR DETECTION OF ACETONE IN THE URINE

SAME SIMPLE TECHNIQUE FOR BOTH

1. A LITTLE POWDER 2. A LITTLE URINE

COLOR REACTION IMMEDIATELY

Accepted for advertising in the Journal of the A.M.A.

Write for descriptive literature

A carrying case containing one vial of Acetone Test (Denco) and one vial of Galatest is now available. This is very convenient for the medical bag or for the diabetic patient. The case also contains a medicine dropper and a Galatest color chart. This handy kit or refills of Acetone Test (Denco) and Galatest are obtainable at all prescription pharmacies and surgical supply houses.

Acetone Test (DENCO)... Galatest

THE DENVER CHEMICAL MANUFACTURING COMPANY, INC.
163 Varick St., New York 13, N. Y.

WHAT NEXT?

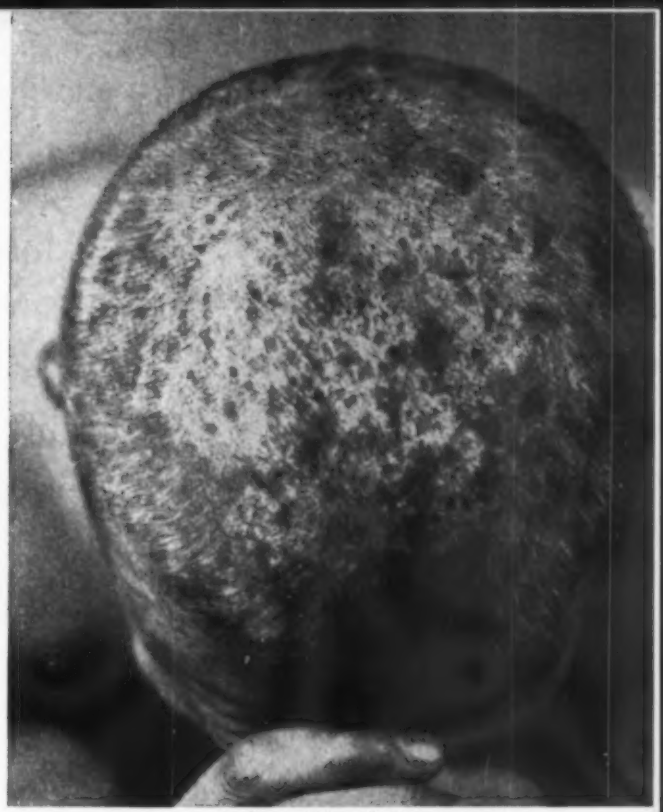
A disease which has long taxed the physician's patience and therapeutic ingenuity now yields to treatment. No longer is there need to run the gamut of available medicaments for one that *might* prove effective.

RIASOL *is* effective in psoriasis. Proof of this is at once evident in the accompanying *unretouched before* and *after* photographs of an actual case treated with RIASOL. RIASOL rapidly clears the unsightly lesions, in many cases with minimal recurrence. Patient confidence and cooperation are assured.

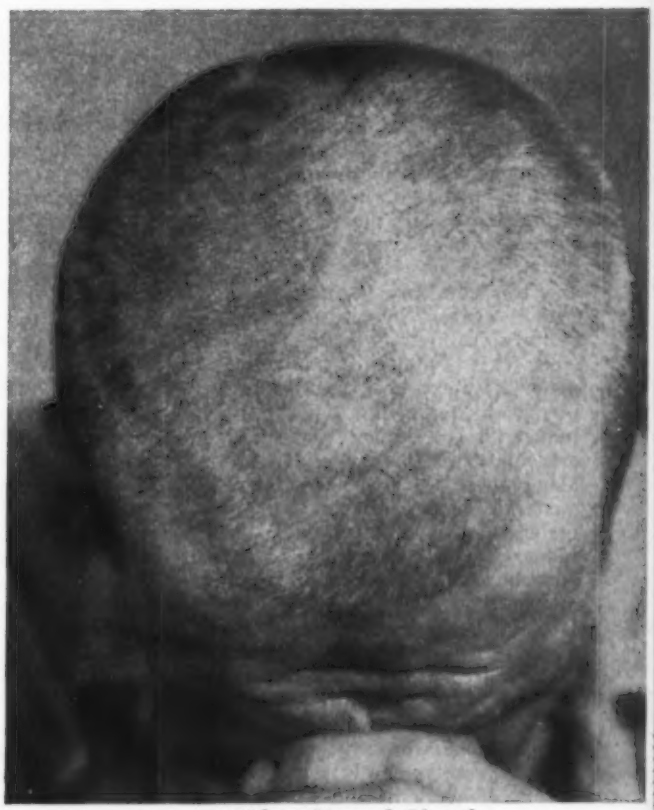
RIASOL contains 0.45% mercury chemically combined with soaps, 0.5% phenol and 0.75% cresol in a washable, non-staining, odorless vehicle.

Apply daily after a mild soap bath and thorough drying. A thin, invisible, economical film suffices. No bandages necessary. After a week, adjust to patient's progress.

RIASOL is not advertised to the laity. Supplied in 4 and 8 fld. oz. bottles, at pharmacies or direct.



Before Riasol Treatment



After Use of Riasol

SPECIAL NOTICE

New 64-page brochure on psoriasis has been mailed to all physicians. Write for a copy if you did not receive yours.

MAIL COUPON TODAY
PROVE RIASOL YOURSELF

SHIELD LABORATORIES IM-3-47
8751 Grand River Ave., Detroit 4, Mich.

Please send me professional literature and generous clinical package of RIASOL.

_____ M.D. _____ Street

City _____ Zone _____ State _____

Druggist _____ Address _____

RIASOL for PSORIASIS

METRAZOL - ORALLY OR BY INJECTION

Metrazol Tablets, Oral Solution and Powder for prescription compounding

COUNCIL ACCEPTED

For circulatory and respiratory support in the emergencies of congestive heart failure or infectious disease prescribe Metrazol, tablets or in solution. In extreme cases oral administration may be supplemented by injections.

DOSE: (1½ to 4½ grains 1 to 3 tablets, or 1 to 3 cc. oral solution) t.i.d. Ampules 1 cc.

Metrazol (Pentamethylentetrazol) T. M. reg. U. S. Pat. Off.

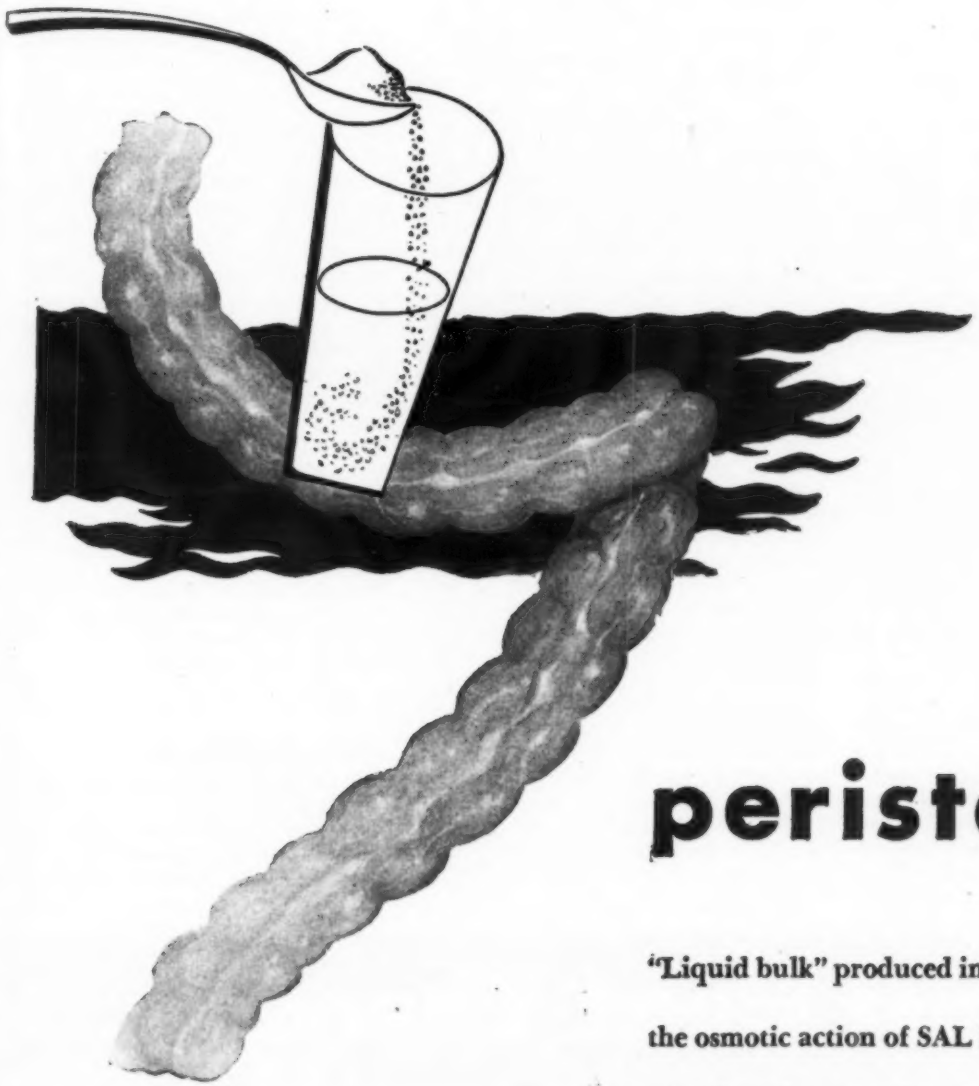
BILHUBER-KNOLL CORP. - - ORANGE, NEW JERSEY

well as between the medical profession and labor. The medical profession is of material aid in the setting up of suitable programs for adequate care of the workers, the pre-employment examinations, and in directing medical activities in this connection at all times. It is quite obvious that industry is desirous of giving employees the best of care, and this can only be assured when care is given by physicians adequately trained in industrial medicine. This is a specialty in medicine generally recognized today and any physician qualifying as a reliable industrial physician and surgeon must naturally have special training along these lines. The reliable industrial physician must be able to understand the many problems of in-industry as well as those of labor; must be able to speak their language and be thoroughly familiar with the latest developments not only in industrial medicine, but also in sanitation, preventive medicine, and be able to evaluate disabilities properly. Industry is naturally desirous of seeing that the workers, when sick or injured, receive the best of care and return to work at the earliest possible moment—although, of course, they do not want their men to return until it is entirely safe to do so. Industrial physicians today should urge all workers to take out pre-payment medical and surgical insurance so they will be able to meet the costs or the major portion thereof, when the unexpected or so-called "catastrophic illness" or accident is their lot. This is the best possible answer today for these men, and in the long run, will be much cheaper for them than would be the case if a compulsory health insurance plan were in operation. By being so protected, they should have less to worry about when sick or disabled from accidental causes. Labor, naturally and properly, expects something from the medical profession. By the same token, both industry and labor owe certain allegience to the medical profession for their interest and action in regard to industrial groups. They should realize that when problems concerning health and medical care are under consideration, they should ask for guidance from the medical profession. Only those with medical training are best able to give advice on these subjects. For many years the medical profession has been intensely interested in the health of workers and the care of these people when disabled in connection with their duties. The necessity for special training for those who become industrial physicians has been thoroughly recognized. It is quite obviously necessary that labor, management, and the medical profession maintain a closer relationship in their cooperative programs in the future. This unquestionably wlil react to the best advantage of all groups concerned.

—Editorial in *Illinois Med. J.*, January, 1947.

Sniffle Stoppers

NEW methods of air purification are now being widely tested. If successful in practice, they will reduce air-borne respiratory infections, which cause about 35% of all industrial absences due to illness and injury. In crowded New York City, 6% of all working time is lost because of respiratory diseases. Air sterilization methods, used alone or in combination, include ultra-violet lamps, use of glycol vapors, and use of an electrostatic dust precipitator, which knocks down bacteria along with the dust. Interest is currently focussed on protecting places of public assembly; working places have received first attention, and other sites of high infectivity may be treated if current experiments are successful. One point still in question is the extent to which any protection of the working place will help an individual who is exposed to infection at home, in subways, and elsewhere. Ultra-violet lamps in schoolrooms and hospitals have reportedly cut air-borne infection, including mumps and measles, by 25 to 50%. Since the radiation can affect skin and eyes, lamps are usually installed above the head level. Movement of room air over the lamps by ordinary circulation is usually adequate, though bacteria lurking in any dark spots are not destroyed. Most common use of the lamps at present is in hospital operating rooms and nurseries, where they have proved effective. In one large-scale installation, 99.5% of the bacteria entering the rooms were reported destroyed by lamps placed in the ventilating system. Cross-infection by the occupants of a room, however, is not prevented by such an installation. Air-borne bacteria may be associated with either dust or water particles. Because of its affinity for water, glycol vapor in the air is absorbed into the particle and kills the bacteria. Glycol vapors are reported to destroy the principal organisms involved in scarlet fever, pneumonia, sore throats, and boils and abscesses, as well as the viruses of mumps, measles, and perhaps certain other infections. British research on protecting air-raid shelters has been extended by the U. S. Army Commission on Airborne Infections to determine the conditions for optimum efficiency of the glycol



peristalsis

"Liquid bulk" produced in the gut by the osmotic action of SAL HEPATICA tends to stimulate the normal peristaltic wave to laxation or catharsis.

The desired action of this balanced saline can be easily controlled by the physician through proper regulation of dosage. Speedy, thorough action throughout the entire canal.

SAL HEPATICA

A professional product of

BRISTOL-MYERS COMPANY, 19 WEST 50th STREET, NEW YORK 20, N. Y.

vapors. In general, glycols work with increasing efficiency in increasing humidity. Ideal conditions for a bactericidal concentration of glycol vapor require a temperature between 50° F and 80° F and a relative humidity between 20 and 60%. One method of dispersing the glycol depends on passing heated air over disks rotating through a bath of glycol. Another method employs boiling mixtures of glycol and water. In a small unit glycol is evaporated from wicks by means of a heat lamp. Although the techniques are well developed, vaporization equipment must be installed and maintained by experts for the desired precise operation. Not all air-conditioning systems can be adapted to glycol and the initial investment is high. Relatively simple home equipment has been designed, but will not be available to the public until at least this winter's tests are evaluated. COST OF GLYCOLS LOW: Either triethylene or propylene glycol may be used, depending on the cost consideration and the engineering problems involved. Propylene glycol is said to be bactericidal in a concentration of one part in eight million of air, which is well below the fog point. Triethylene glycol, effective in even smaller concentrations of one part in 400 million, is considerably cheaper, but the margin between the bactericidal concentration and the point where it condenses on cool surfaces is narrower than for propylene glycol. Thus, greater care must be exercised in maintaining satisfactory operating conditions. One installation in a 15-bed hospital ward used $3.00 worth of propylene glycol in a month, while a four-floor bank building used $150.00 worth of triethylene glycol last winter. Actual efficiency of these installations has not as yet been reported. Other experimental installations are operating in hospital wards, pharmaceutical houses, and office buildings. The statistical data thus acquired are expected to throw further light on the effectiveness of this type of bactericide. The first commercial installations will probably be in combination with other methods of sterilization in pharmaceutical houses, where absolute sterility of air is desired. Use in schools and hospitals, where cross-infection within the room is common, will probably be delayed somewhat by cost consideration. Hospital systems, especially, must be carefully engineered, in order that the recirculated air may be at least as clean as the fresh air. Glycol is advantageous here because it kills bacteria originating in a room, as well as those entering it, and thus reduces cross-infection within a ward. When glycol vaporization is combined with light oiling of floors and blankets in hospital wards, dust-borne bacteria decrease markedly. DUST REMOVAL DESIRABLE: Because the incidence of air-borne bacteria and dust are closely correlated, efficient removal of dust from the air, even without bactericidal treatment, is highly desirable. Electrostatic precipitators have an over-all dust-removal efficiency of 90% or better and remove even extremely small dust particles. Used for a number of years to protect delicate machinery, foods, and beverages from air-borne dirt, they are now recognized as an aid to air sterilization. Acting on the principle of the attraction of opposites, the device draws incoming air through an electrostatic field, where each dust particle receives a positive charge. As the air stream then moves over negatively-charged plates, the dust settles onto the plates, from which it may be hosed. The units may be installed in ventilating systems, if the existing space is adequate; the cost is, of course, less for units going into new systems. Some manufacturers have indicated that the over-all cost for a typical installation might be in the range of $1000 to $5000, depending on the air volume required, and a home room unit might cost about $500. Maintenance is extremely simple and the cost of upkeep is said to be low.

—From the *Industrial Bulletin* of Arthur D. Little, Inc., February, 1947.

Noise and Efficiency

IN ORDER to determine the effects, if any, of noise on human efficiency, it was necessary to devise a number of psychomotor tasks which would provide a measure of

Moist Heat Therapy

IN conditions which require Moist Heat applications —but no specialized nursing care — an Antiphlogistine poultice is indicated.

This ready-to-use medicated poultice is applied comfortably hot directly to the affected area. It maintains Moist Heat for many hours.

The comforting Moist Heat of an Antiphlogistine pack is effective in relieving the pain, swelling, and muscle spasms due to sprains, strains and contusions.

It is likewise effective in affections of the respiratory system; in relieving the cough, soreness, tightness of the chest, muscular and pleuritic pain.

Antiphlogistine may be used with chemo-therapy.

Antiphlogistine

Formula: Chemically pure Glycerine 45.000%, Iodine 0.01%, Boric Acid 0.1%, Salicylic Acid 0.02%, Oil of Wintergreen 0.002%, Oil of Peppermint 0.002%, Oil of Eucalyptus 0.002%, Kaolin Dehydrated 54.864%.

The Denver Chemical Mfg. Co., Inc., New York 13, N. Y.

efficiency for a complicated adjustment by the subject. Two of these tasks were of novel design. One of them utilized typical airplane controls to direct a beam of light at a pattern of photoelectric cells in such a way that the subject could, by properly coordinated movements, carry out a pre-designed series of adjustments. The other task required a subject, by means of airplane controls, to adjust the position of the spot on a cathode-ray oscillograph and the position of the pointer on a direction meter to compensate for deflections introduced externally by the experimenter. This task partially simulated the requirements of instrument flying. In addition to these two tasks, one other standard measure of perceptual motor adjustment was made. In this test the subject was required to follow a revolving target with a flexible stylus. The target consisted of a small disc near the periphery of a phonograph turntable, which revolved at the rate of 99 rpm. Other tests were designed to measure more specific psychomotor functions. For example, reaction time was measured by a device which required the subject to depress one, and only one, of four keys depending upon which of four spatially discrete, circular surfaces was illuminated. Various measures of visual functions were made, since these functions are important in many human tasks. For example, one of the important regulatory adjustments for vision is that of focusing, or accommodation, which is essential for clear vision. In flying, the constant necessity of the pilot's maintaining accurate visual knowledge of objects at a considerable distance from his eyes and at the same time of the multitude of dials and instruments on his control panel close by, is evidence of the great importance of this physiological function in aviation. Our apparatus for measuring the speed of accommodation consisted essentially of two visual targets located at different distances from the subject's eye. The measurement made consisted of the time taken by the subject, who had his eye on the near target, to change suddenly to the far target, as soon as it was illuminated, and focus this far target accurately enough to make out the break in the Landolt ring. The results of these various measures showed that noise *per se* has little or no effect upon the efficiency with which a subject can perform various complicated and specific psychomotor functions. True, the noise was reported as annoying to the subjects, but its effects on general efficiency were apparently nil. It is not maintained that the efficiency of aircraft pilots is unimpaired during long flight. Noise added to vibration, to general apprehension, etc., may lower general efficiency. The experiments do show that by itself, noise of the intensity and duration used has little or no effect upon psychomotor efficiency. However, noise does have a marked and determinate effect upon speech communication. A loud noise masks the weaker sounds of speech and makes communication over inferior instruments uncertain and unreliable. Consequently, much of the effort of the research workers at Psycho-Acoustic Laboratory was devoted to the testing and improvement of devices for speech communication.

—From "The Effect of Noise on Efficiency," by J. P. EGAN, S. S. STEVENS, T. H. WATERMAN, JOSEPH MILLER and R. H. KNAPP, Psycho-Acoustic Laboratory, Harvard University.

What Did You Do, Daddy?

THE *Civilian Production Administrator reports that last year 145 of his employees stuck staples in their fingers, 87 were pricked by pens and pencils, 122 fell over furniture and phones, 124 dashed into doors, and 99 hurt their hands in desk drawers.* — Government Press Release.

"Why the bandage, old man? Cut your hand on something?"

"Well, hardly. I work at the Civilian Production Administration."

"Of course, I should have guessed. Been there long?"

"All through the war. I could have gotten in the infantry but I'm not the type to take the easy way out."

"Was it really . . . you know . . . as tough as they say?"

"It was pretty rugged, but war isn't a parlor game any way you look at it."

"Did you see much . . . violence?"

"Too much, but like everything else you get used to it. Four men in my Division dashed into doors in *one afternoon.* The next day my Section Chief fell over his phone. It was all around us."

"I'd like to know how you hurt your hand, unless you'd rather not talk about it . . ."

"It was a staple wound. We had just got the stapler that morning and I was in what I guess you'd call the first wave. I was stapling some priority applications when . . . well, my number came up."

"Were you the only one?"

"No. The guy next to me got it in the pinkie."

"There were lots of stories—back home that is—about pen and pencil pricks. Did you see much of that?"

"There was plenty of it all right. I got one nasty pencil prick myself, on the left hand, but it could have been worse. It could have been my brief case hand."

"Yeah, you were lucky."

"The guys I'll never forget were the ones who caught their hands in desk drawers. I remember a boy in Statistics — a sandy-haired, blue-eyed kid from a farm somewhere in Idaho — who was reaching in his drawer for a paper clip when it started to close. We thought for a while he'd lose the nail, but he didn't."

"Gee, we sure owe you fellows a lot."

"We?"

"Yes, I was a paratrooper. I tried to make CPA but I couldn't pass the physical. I guess I just didn't have the stuff."

—CASKIE STINNETT, in the *American Legion Magazine*, January, 1947.

THE old primitive concept of accepting damage to health, life, and property as an inherent part of industrial operations with effort directed to salvage and repair, has given way to the philosophy and to the art and science of prevention. Industrial hygiene (includes) the normal interest of a wide variety of professions: chemistry in all its divisions, physics, engineering, medicine—physiology, pathology, psychiatry. There is much over-lapping of interest and knowledge; in fact, a professional hybrid is more essential than a pure-blood professional—a doctor of medicine-chemist-engineer cross or a chemist-engineer-toxicologist."

—WM. P. YANT, D.Sc.

American Mutual Seminar

ON October 22 and 23, 140 industrial physicians and surgeons gathered in Philadelphia. At the invitation of American Mutual they came to listen to papers by medical leaders and to explore improved methods and techniques. Via

EXCEPTIONAL VALUE!

6 THOMAS LEG SPLINTS

6 THOMAS ARM SPLINTS

Packed in a Single Case

Guaranteed Brand New and of Finest Quality

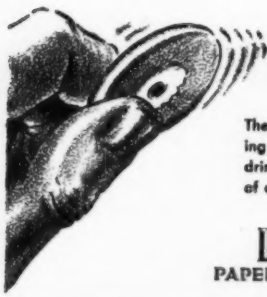
F.O.B. Jackson Heights, N. Y.

ACTUAL VALUE OVER $100 PER CASE

SALE PRICE $10 PER CASE

PROFESSIONAL SURGICAL SUPPLY CO., INC.

74-18 ROOSEVELT AVE., JACKSON HEIGHTS, N. Y.



ERASE-

The possibility of oral-carried infection at drinking facilities. A Fresh Lily Vee Cup* for every drink is positive protection—for just a fraction of a penny. *Trade Mark Reg. U. S. Pat. Off.

LILY-TULIP
PAPER CUPS AND FOOD CONTAINERS

LILY-TULIP CUP CORPORATION
NEW YORK, N. Y. KANSAS CITY, MO. LOS ANGELES, CALIF.

questionnaire the company had asked them what subjects they wished presented. The talks and round-table discussions which comprised the two-day seminar followed the lines suggested by the participants themselves. The gathering marked the Ninth Seminar conducted by American Mutual in a principal Eastern, Southern, or Middle Western city. Like its forerunners the latest seminar was projected to bring the newest developments in industrial medicine and surgery to the attention of a wide circle of interested medical men. Also like its forerunners, the Ninth Seminar was informal. Unlike most medical gatherings it was conducted more in the style of a New England town meeting. Discussed was the latest progress in diagnosis and treatment of shoulder injuries, knee injuries and heart disease as related to industry. Procedures for attacking the new medical and technical conditions created by industrial and scientific advances were included in the discussion. Under the leadership of a specialist, each subject was debated at length in a final round-table discussion presided over by Dr. William Estes, President of the Pennsylvania State Medical Society. Following a precedent set in its eight previous seminars on industrial medicine and surgery, American Mutual will have prepared transcripts of the papers given in Philadelphia. Copies will be available in limited supply by addressing American Mutual Magazine, 142 Berkeley Street, Boston 16, Massachusetts.

—A. D. BRITTON, Director of Medical Relations, in *American Mutual Magazine*, December, 1946.

Rx DESITIN OINTMENT
The External Cod-Liver Oil Therapy

USED EFFECTIVELY IN THE TREATMENT OF
Wounds, Burns, Ulcers, especially of the Leg, Intertrigo, Eczema, Tropical Ulcer, also in the Care of Infants

Desitin Ointment contains Cod-Liver Oil, Zinc Oxide, Petrolatum, Lanum and Talcum. The Cod-Liver Oil, subjected to a special treatment which produces *stabilization* of the Vitamins A and D and of the unsaturated fatty acids, forms the active constituent of the Desitin Preparations. The first among cod-liver oil products to possess unlimited keeping qualities, Desitin, in its various combinations, has rapidly gained prominence in all parts of the globe.

Desitin Ointment is absolutely non-irritant; it acts as an antiphlogistic, allays pain and itching; it stimulates granulation, favors epithelialisation and smooth cicatrisation. Under a Desitin dressing, necrotic tissue is quickly cast off; the dressing does not adhere to the wound and may therefore be changed without causing pain and without interfering with granulations already formed; it is not liquefied by the heat of the body nor in any way decomposed by wound secretions, urine, exudation or excrements.

DESITIN POWDER

Indications: Minor Burns, Exanthema, Dermatitis, Care of Infants, Care of the Feet, Massage and Sport purposes.

Desitin Powder is saturated with cod-liver oil and does not therefore deprive the skin of its natural fat as dusting powders commonly do. Desitin Powder contains Cod-Liver Oil, (with the maximum amounts of Vitamins and unsaturated fatty acids) Zinc Oxide and Talcum.

Professional literature and samples for Physicians' trial will be gladly sent upon request.

Sole Manufacturer and Distributor in U. S. A.
DESITIN CHEMICAL COMPANY
70 SHIP STREET PROVIDENCE, RHODE ISLAND

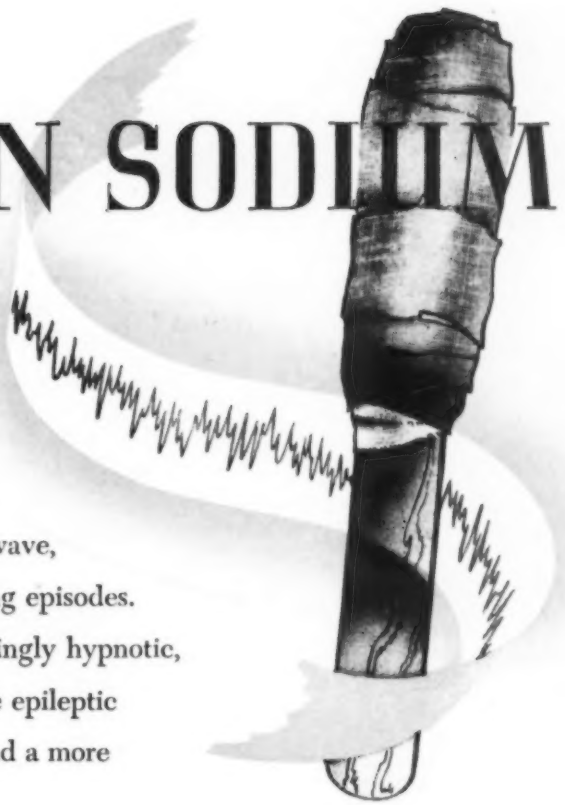
DR. PILGRIM

—Continued from page 6.

cupational diseases, either by physicians or attorneys; and in the evening to see "Humoresque," wherein John Garfield apparently plays the violin with wonderful technique, even some of the classics—this appearing to PILGRIM one of the best examples of coordination of sound and sight the films have yet given; meanwhile, Oscar Levant doing his usual job of excellent music punctuated by ironic display. . . . AND to a plant to make an atmospheric lead study with all of its consequent problems of technique and interpretation, and much pleased at the cooperation of management; and then with the analyses, to which intense concentration must be given. . . . AND meanwhile, a visit from DR. V. P. SIEGEL, of East St. Louis, Illinois, to discuss medical service for small plants, in which there were many problems of mutual interest and difficulty. . . . AND enroute to Cleveland for several days of study of dust problems in a foundry, concerned with the collection of air samples and material for other analyses; and again impressed with the cooperation and the interest of top management in these problems; and in the evening of one day, looking on at American League bridge game and on the second evening at dinner with my friends, BOB and GRACE FERGUSON, with much talk of mutual interest. . . . AND back to the laboratory with detail of analyses and meanwhile, having a long distance telephone call from Charleston, West Virginia, concerning a future speaking engagement. . . . AND arranging lantern slides for a forthcoming lecture, and also at a conference with engineers on administrative and technical problems. . . .

SYMBOLS OF SIGNIFICANCE

DILANTIN SODIUM



The cry, the fall,

the champing teeth, the tonic and clonic contractures, the incontinence—all may yield to DILANTIN SODIUM. The E.E.G. can trace the pathologic brain wave, yet the epileptic may be spared his terrifying episodes. Powerfully anti-convulsant rather than dullingly hypnotic, DILANTIN SODIUM KAPSEALS* offer to the epileptic a sense of security and an opportunity to lead a more normal and useful life.

DILANTIN SODIUM KAPSEALS—another product of revolutionary importance in the treatment of a specific disease; another of a long line of Parke-Davis preparations whose service to the profession created a dependable symbol of significance in medical therapeutics—MEDICAMENTA VERA.

DILANTIN SODIUM KAPSEALS (diphenylhydantoin sodium), containing 0.03 Gm. (½ grain) and 0.1 Gm. (1½ grains), are supplied in bottles of 100, 500 and 1000. Individual dosage is determined by the severity of the condition.

*Trademark Reg. U. S. Pat. Off.

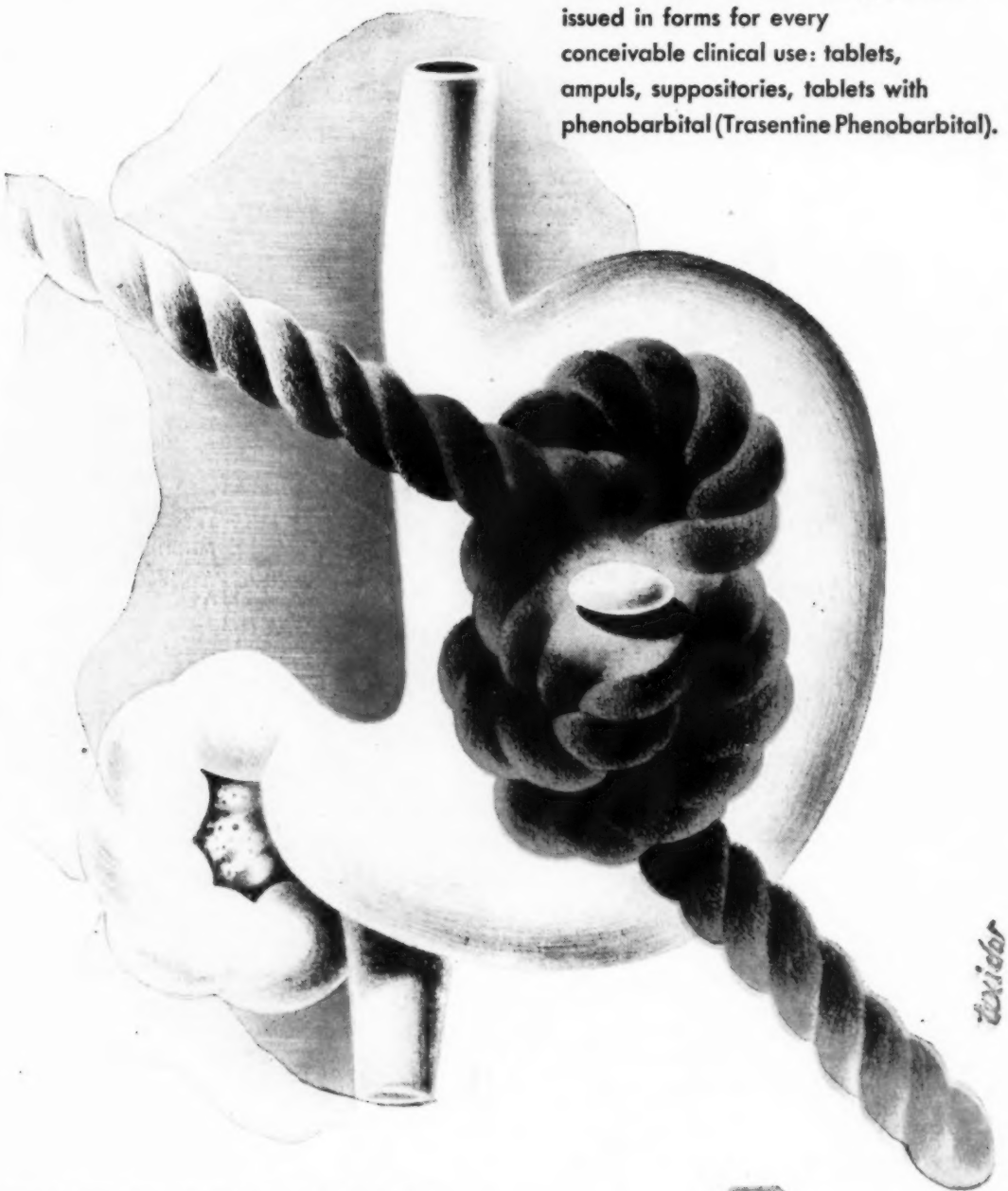
PARKE, DAVIS & COMPANY • DETROIT 32, MICHIGAN

MEDICAMENTA VERA · P & CO.

Trasentine

(brand of adiphenine). T. M. Reg. U. S. Pat. Off. and Canada.

When spasm ties smooth muscle into knots, prescribe Trasentine, a highly effective well-tolerated antispasmodic issued in forms for every conceivable clinical use: tablets, ampuls, suppositories, tablets with phenobarbital (Trasentine Phenobarbital).



For further information, write Professional Service Dept.

CIBA PHARMACEUTICAL PRODUCTS, INC. SUMMIT, NEW JERSEY

CIBA